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OLNEY, ROBERT JOHN

A STUDY TO DETERMINE ENTRY-LEVEL CHARACTERISTICS OF
PROSPECTIVE EMPLOYEES FOR BUSINESS OFFICE POSITIONS WHICH
UTILIZE COMPONENTS OF SYSTEMS PLANNING AND CONTROLLING

The University of Oklahoma

PH.D.

1980

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THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

A STUDY TO DETERMINE ENTRY-LEVEL CHARACTERISTICS
OF PROSPECTIVE EMPLOYEES FOR BUSINESS OFFICE
POSITIONS WHICH UTILIZE COMPONENTS OF
SYSTEMS PLANNING AND CONTROLLING

A DISSERTATION

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ROBERT J. OLNEY

Norman, Oklahoma

1980

A STUDY TO DETERMINE ENTRY-LEVEL CHARACTERISTICS
OF PROSPECTIVE EMPLOYEES FOR BUSINESS OFFICE
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SYSTEMS PLANNING AND CONTROLLING

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To the memory of my father, Fred W. Olney, whose teaching and guidance encourage me to try.

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A STUDY TO DETERMINE ENTRY-LEVEL CHARACTERISTICS
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CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

Management, an essential element of organized endeavors, is one of man's oldest tasks. Wren defines management as an activity which performs certain functions in order to obtain the effective acquisition, allocation, and utilization of human efforts and physical resources in order to accomplish some goal.¹

Management is one of the most dynamic of all disciplines. As technology, institutions, and people change, our ideas of management evolve in order to cope with society's oldest problem--the allocation and utilization of scarce resources to meet the manifold desires of mankind.²

Significant changes in the theory and practice of management have paralleled the startling changes in industrial technology which have occurred since the second World War. These changes in the theory of

¹Daniel A. Wren, The Evolution of Management Thought, (New York: The Ronald Press Company, 1972), p. 3.

²Ibid, pp. 523-526.

management, although more subtle than those arising from technological innovation, have nevertheless had a great impact upon the teaching and practice of management. For example, the systems concept is one of the major managerial theories that has come to the forefront during the past twenty-five years. During the last decade, the systems theory has gained significant recognition.¹

Modern systems theory probably developed in response to problems associated with the ever-expanding horizons of knowledge. Most systems theorists conceive of the organization as a complex input-throughput-output system. The organization is separated from its environment by a permeable boundary. Through this boundary, transactions occur which enable the organization to secure human, financial, and material inputs. Within organizational boundaries, a number of interacting subsystems transform these inputs into a final product suitable to the environment. Output passes through the organization's boundaries, reactivating the input-throughput-output cycle.²

In contemporary business literature some writers treat the systems concept as something new. Some authors go so far as to imply that the application of the concept to business is also new. Del Mar's study indicates that neither claim is correct. Rather the development of today's systems concept has been evolutionary in nature, not revolutionary. As businesses have increased in size and complexity, a more sophisticated managerial viewpoint of the whole organization has become mandatory.

¹Donald Del Mar, "An Investigation Into the Origin of the Systems Concept," (DBA dissertation, The University of Oklahoma, 1970), p. 1.

²Charles J. Coleman and David D. Palmer, "Organizational Application of Systems Theory," Business Horizons, (December, 1973): p. 77.

This viewpoint appears necessary for the continued success and achievement of strategic goals of business organizations.¹

Coleman and Palmer contend that the systems approach provides a basis for understanding organizations and their problems. The systems approach may one day produce a revolution in organizations comparable to the one brought about by Taylor with scientific management.² Today systems analysis has become so widely used that a full account of its status would fill several books, if not a small library. More than half the companies currently listed in Fortune "500" have access to computer programs that model the national and world economics as integrated systems. These programs can be manipulated mathematically, thereby relating company policy and performance to many important economic factors. Many other companies, large and small, subscribe to such systems analysis models through their bankers or consultants. In contrast, as recently as ten years ago, only about half as many companies based their planning on mathematical economic models.³

Since 1975, there has been an explosion of technology designed to aid in the implementation of the systems approach to office work. The driving forces behind this explosion are efficiency and economy. Some studies indicate that while industrial productivity has increased close to 90 percent in the past ten years, office productivity has risen only

¹Del Mar, "An Investigation Into the Origin of the Systems Concept," pp. 2-3.

²Coleman and Palmer, "Organizational Application of Systems Theory," p. 77.

³George A.W. Boehm, "Shaping Decisions With Systems Analysis," Harvard Business Review, (September-October, 1976): p. 92.

4 percent. The office is the most labor-intensive activity center in business today. The need to increase office productivity and reduce office costs is of paramount importance to management.¹

The growing complexity of organizations and the need to increase office productivity while at the same time reducing office costs have resulted in changes in office procedures, equipment, and personnel. Barry writes that the changes taking place in office procedures have caused the work that is performed in today's business office not only to be high in skill needs but also to be high in knowledge needs and high in judgment needs.²

In describing changes in equipment in today's office situations. Connell reports that the primary function of all new office technologies is in helping management communicate. Technological advancements affecting office communications now include the electronic computer, work processing, reprographics, micrographics, video-conferencing, electronic mail, ergonomics, and telecommunications. Electronic office systems introduce the power of electronic storage, distribution, and retrieval into almost every facet of office operations. Connell believes that the office of the future is not just the automated office or the electronic office; rather, it is one in which new technologies give senior management the opportunity to consider entirely new approaches to better organization, management, and control of the enterprise.³

¹John J. Connell, "The Office of the Future," Journal of Systems Management, (February, 1979): p. 6.

²Theodore Barry, "How to Improve Employee Productivity," The Office, (January, 1977): p. 77.

³Connell, "The Office of the Future," p. 9.

The growing complexity of organizations has resulted in concurrent changes in the training needs of personnel. Shrout reports that the most valuable asset of a business is its trained personnel. The training needs of organizational personnel are inextricably linked with the goals, technology, and management theory of the organization. These needs vary over time as the organization attempts to adapt to the complexities of changing internal and external requirements.¹ Of significance to educators is the fact that, according to Connell, today's office personnel are neither organized, trained, nor ready to assume their new role in the office of tomorrow.²

Murdick and Ross conclude that the rapid advancements being made in today's business organizations make evident:

1. The demand for new approaches to problem solving and decision making.
2. The need for business leaders and management scientists who are not captive of traditional practice.
3. The need for more efficient office techniques.
4. The need for improved computer applications.

Systems theory and computer science in conjunction with new organizational patterns point the way to the future. Murdick and Ross believe that the answer to improved utilization of the computer and management systems lies in better education.³

¹Ethel Hester Shrout, "A Study of Job-Related Competencies Used by Information Systems Analysts," (Ed.D. dissertation, Oklahoma State University, 1970), pp. 16, 30.

²Connell, "The Office of the Future," p. 10.

³Robert G. Murdick and Joel E. Ross, "The Need for Systems Education," Journal of Systems Management, (July, 1969); pp. 8-9.

Several action research and journal articles contain isolated suggestions an organization may follow to effectively manage the rapidly accelerating changes affecting today's offices. For instance, Bennis describes the problems associated with rapid technological change when he writes that scientific knowledge more than doubles with each decade. Before World War I a person might live a productive and successful life and find himself outmoded by the end of it. By the end of World War II, a similar person could find that his training, skills, outlook, and ways of thinking were obsolete in the middle of his career. We are now in an era where man's knowledge and approach to his job can be obsolete before he begins the career for which he has trained.¹ Thus, prospective office employees should develop an awareness of and the ability to adjust to rapid technological change.

Campbell writes that in business successful change involves a team or group effort. New ways have to be developed to cope with the increasingly complex business environment. New approaches, new applications, and new understandings mean a change in the old methods of processing business transactions. Campbell believes that without the "team concept," productivity rapidly declines to a minimal effort by individuals who otherwise are not personally motivated. According to Campbell, when preparing to change old methods, the essentiality of the team effort cannot be understated.² Seemingly, a significant characteristic of potential office employees is the ability to become an effective team member.

¹Warren G. Bennis, Beyond Bureaucracy, (New York: McGraw-Hill Book Company, 1973), p. 22.

²Robert Braun Campbell, "Analyzing Systems Analysts," Journal of Systems Management, (August, 1976): pp. 26-27.

Joslin and Bassler believe that communication is one of the most important aspects of adjusting to office changes. Their report also emphasizes that the information processing function in the office is growing. Functions which are important today will continue to be important in the future, but these functions will be joined by many new functions. Therefore, if one expects to continue in or enter the systems field, one needs to become prepared for the new functions as well as those being performed today.¹

Rapid changes apparently result in increased employee obsolescence. Miller writes that a surprising number of employees appear to have little knowledge of the devastating effects that their impending obsolescence will have on themselves as individuals. Obsolete people are unhappy, frustrated, dissatisfied, inefficient, non-effective, non-productive, and career deadened. Obsolescence for a company is an annoyance; for an individual it is inevitably a disaster. Miller concludes that individuals must be ultimately responsible for the design and implementation of their own professional development program.² This responsibility of employees for their own professional development programs makes characteristics relating to the desire for retraining and updating of office skills significant for prospective office employees.

Greater employee creativity has been suggested as a solution to increased office changes. Edwards stated that the strength of any enterprise depends on whether creativity is cultivated or suppressed. All

¹Edward O. Joslin and Richard A. Bassler, "Systems Managers Speak Out on Profession's Directions," Journal of Systems Management, (February, 1976): pp. 18-21.

²James E. Miller, "Eliminate Your Obsolescence," Journal of Systems Management, (November, 1976): pp. 34-36.

members of an organization can and indeed must learn to ask questions, challenge old systems and concepts, experiment, innovate, and learn to welcome and cope with change in every possible manner.¹ According to Edwards, an important characteristic for prospective office employees is creativity.

Boehm writes that the educational process is the logical solution to the preparation of future office workers to cope with rapid technological change. Many systems practitioners are convinced that the general concepts and elementary techniques of systems work should be taught in high schools, perhaps even in primary schools. This information could be introduced into many conventional courses because it applies not only to business and economics but also to social and historical change, functions of the human body, and many other activities that a well-educated person should understand, at least in principle.²

Seiler reports that the education of an individual will, in general, precede his technical or professional training. Education is directed toward the development of the mind, the sharpening of intuitive and associative skills, and the growth of the individual into a thinking, moral, aware person. In its purest form, education is concerned with the development of an ability to grasp abstract relationships and to reason logically. In the case of an educational program designed for persons entering the systems oriented business organization, Seiler concludes that the objectives must be to provide not only a job expertise sufficient to prepare the individual for specialized job-training, but also

¹Morris O. Edwards, "Creativity Solves Management Problems," Journal of Systems Management, (June, 1975): pp. 14-20.

²Boehm, "Shaping Decisions with Systems Analysis," pp. 92-93.

to provide a general educational background sufficient for the individual to keep abreast of and work effectively with those unforeseen changes which will occur within the next several decades. Seiler believes that providing for the knowledge needs of today is job training; and providing a foundation for the yet unknown needs of tomorrow is education.¹ Prospective office employees should therefore develop the ability to grasp abstract relationships and the ability to reason logically.

Business personnel and business educators have consistently attempted to identify the skills which office jobs require as well as how to teach these skills. By and large, the technical skills utilized in current office practice have been identified and taught, so that one entering the world of work can in a very short time, be capable of earning his wage. These technical skills have been analyzed and teaching materials made available that help the employee increase his present abilities. The employee, then, benefits himself, his employer, and the nation as a whole. Blackstone believes that in our nation, technical skills are not enough. He states that cognitive skills such as reading, writing, citizenship skills, moral and ethical behavior, and the ability to succeed in further education, are all essential for successful adjustment to the world of work. Blackstone concludes that there must be a joining of technical and social skills in the total preparation of the working population which today includes almost everyone.²

¹Robert E. Seiler, "What Makes a Successful Systems Person?," Journal of Systems Management, (March, 1976): pp. 6-10.

²Bruce I. Blackstone, "Don't Neglect Training in Social Skills," The Office, (January, 1977): p. 130.

Gilbert claims that educational systems should recognize the needs of the world of work so that when individuals leave school they are not placed at a comparative disadvantage when trying to obtain jobs which would normally be within their capability. Schools, teachers, and colleges of education must all look outward, to discover what is happening in the world of work as distinct from the world of education. According to Gilbert, modern education seems to have failed in one area for which it was designed--to arouse curiosity in the individual and to make the individual seek information and suggest solutions.¹

Need for the Study

Two points emerge from an initial review of the literature:

These points are:

1. Rapid changes occurring in business organizations require concomitant changes in those educational programs designed to prepare students for office occupations.
2. Although individual authors identify isolated characteristics desirable in future office employees, no complete analysis of the personal and work characteristics necessary to assume entry-level tasks in systems oriented business organizations has been attempted.

Clearly, changes in procedures, equipment, and personnel are taking place in today's business offices. Educational programs must be developed which stress those personal and work characteristics which are necessary for job-entry and horizontal and vertical job movement within the systems oriented office. Curricular revisions in office education programs should be made only after determining the needs of office employees. The need for business educators to continually revise and

¹Roger Gilbert, "Counting the Cost of Bad Spelling," Personnel Management, (May, 1977): pp. 21-24.

update the programs designed for training prospective office employees makes evident the need for a study to monitor these changes.

This descriptive research study will synthesize the judgments of those supervisors employed in business organizations which utilize systems concepts to determine the importance of selected personal and work characteristics to entry-level task performance.

Objectives of the Study

The primary objective of this study was to determine the personal and work characteristics necessary for success as an entry-level office employee in business organizations which utilize systems planning and controlling in their approaches to organization and management. A secondary objective was to draw implications from a study of the findings for future curriculum development in office education programs.

Significance of the Study

The relevance of education for business depends upon whether that education adequately meets the needs of students, the business community, and society. This study seeks to identify the personal and work characteristics which entry-level systems oriented business office personnel utilize in the performance of their jobs. The study should provide educators with an awareness of the personal and work characteristics needed by students of business education training programs.

This research study has significance in that it attempts to determine changes that are taking place in the world of office work. The findings of the study may be utilized by the educational community in the evaluation and development of curricula. The study also has significance for the business community. Through the utilization of the study results,

business educators should be able to provide better-qualified, entry-level office employees for the business community.

Limitations

A survey to determine entry-level personal and work characteristics judged important by business organizations which utilize systems concepts may reflect some bias when the persons who comprise the sample currently hold positions in business offices which adhere to systems concepts. Nevertheless, those persons are best prepared to evaluate the work performed and effectively judge the characteristics necessary to satisfactorily perform the job duties.

The population from which the sample was drawn was limited to the Oklahoma City Standard Metropolitan Statistical Area. The area includes Oklahoma, Canadian, Cleveland, McClain, and Pottawatomie counties. The sample was drawn from firms with membership in either the Association for Systems Management or the Data Processing Management Association. This procedure may limit the study because it excludes those persons employed in offices which utilize systems concepts but do not hold current membership within one or the other Association.

Operational Definitions

Entry-Level Personal and Work Characteristic - A necessary trait which is required of a worker to effectively assume the responsibilities of office work in a business where technology and systems are modifying tasks, procedures, and the person-machine interface. Included in the definition are those qualifications for job-entry which enable a person to be both vertically and horizontally mobile.

Respondent - Those persons completing the questionnaire who are employed in supervisory positions in business organizations which utilize systems planning and controlling.

System - A group of related components designed (put together) to accomplish a particular objective according to plan.¹

Systems Concepts - Del Mar defines the term as having three explicit characteristics: (1) A means of viewing as a whole the various elements comprising the organization and its environment, (2) recognition of what is known as the synergistic effect (i.e., the total is greater than the sum of its parts), and (3) recognition of the importance of the interrelation between the parts or elements.²

Research Design

The first step in the study was a comprehensive search of the related literature.

The second step was to obtain the cooperation of the Oklahoma City Chapters of the Association for Systems Management and The Data Processing Management Association.

The third step was to conduct informal interviews with selected members of the Associations to determine major personal and work characteristics to be considered when constructing the data collection instrument.

The fourth step was to design the data collection instrument based upon a study of the literature, other related research questionnaires,

¹Del Mar, "An Investigation Into the Origin of the Systems Concept," p. 25.

²Ibid., p. 30.

results of formal interviews with systems analysts, and consultation with selected faculty members of The University of Oklahoma.

The fifth step was to devise a coding system for standardization of the collected data and design a computer program suitable for the interpretation of the data.

The sixth step was to conduct a pilot study, make revisions suggested by the pilot study, and publish the data collection instrument. The pilot study used a sample of ten persons not to be included in the research sample.

The seventh step was to develop a sample of persons employed in business organizations which utilize systems planning and controlling from the active membership of the Oklahoma City Chapters of the Association for Systems Management and The Data Processing Management Association.

The eighth step was to distribute the data collection instrument to the sample.

The ninth step was to tabulate and analyze the collected data utilizing statistical techniques including contingency tables, frequency counts, and means. These techniques are described in Chapter III.

The final step in the study was to report the findings, analyses, and conclusions from the research.

Organization of the Study

Chapter I of the formal report includes the introduction, need for the study, objectives of the study, significance of the study, limitations, operational definitions, research design, and organization of the study.

Chapter II presents a review of the related literature.

Chapter III describes the research design and the procedures followed.

Chapter IV presents the collected data and the results of the statistical procedures which were used to analyze the data.

Chapter V consists of the summary of the findings, conclusions, and recommendations for further research.

Summary

Management theory is a dynamic discipline which changes as technology, institutions, and people change. One change in the theory of management is the systems concept. This theory views the organization as a complex input-throughput-output system separated from its environment by a permeable boundary. Today systems analysis has become widely used as a tool for management.

Recently, there has been an explosion of technology designed to aid in the implementation of the systems theory into office work. The driving forces behind this explosion are efficiency and economy. The growing complexity of today's business organizations and the need to increase office efficiency while reducing office costs have resulted in changes in office procedures, equipment, and personnel.

Rapid changes occurring in business organizations require concomitant changes in those educational programs designed to prepare students for office occupations. Although isolated personal and work characteristics can be gleaned from the existing literature, no complete analysis has been attempted of the personal and work characteristics needed by office personnel for job-entry and horizontal and vertical job mobility within systems oriented businesses. This descriptive research study will

synthesize the judgments of supervisors employed in businesses which utilize systems concepts in their approaches to organization and management to determine the importance of selected personal and work characteristics to entry-level task performance.

This chapter presents the need for the study, the objectives of the study, and the significance of the study. The operational definitions and the limitations of the study are also presented. The research design and the organization of the study are described.

Chapter II establishes a theoretical base for this study through the review of related research studies and journal articles.

CHAPTER II

REVIEW OF SELECTED RELATED LITERATURE

Introduction

Any research problem must show its lineage from the background of existing knowledge, previous investigation, or contemporary practice. In reviewing the research literature, close attention must be given to conceptual and theoretical formulations that are explicit or implicit within the selected studies.¹

A review of related literature to a research topic is supported by two primary reasons: to identify what research has been conducted on the problem and to establish a theoretical base for the problem.²

This study seeks to identify the personal and work characteristics which entry-level business office and systems support personnel utilize in the performance of their jobs. As noted in Chapter I, an initial review of the literature reflected an absence of research directly related to the problem of this study. Several studies and journal publications do, however, warrant review to establish a theoretical base. Attention has been directed toward the functions and characteristics of the systems approach and to the effects of technology on the office environment.

¹Lawrence F. Locke and Waneen W. Spriduso, Proposals That Work: A Guide for Planning Research, (New York: Columbia University Teachers College Press, 1976), pp. 5-6.

²Fred N. Kerlinger, Foundations of Behavioral Research, Second edition, (New York: Holt, Rinehart and Winston, Inc., 1973), p. 696.

Research and literature addressing the components of office work, the requirements of office personnel and education for systems work have also been reviewed.

Functions and Characteristics of the Systems Approach

Until recently there were two major approaches to the study of organizations. The older approach, based upon Fredrick Taylor, Max Weber, and others, stressed the structural properties of organizations. This approach led to theories of bureaucracy and the development of many principles of management. A later approach, which stemmed from the Hawthorne experiments, emphasized human elements in the organization and led to leadership and motivational theories. In time, analysts found both approaches inadequate. The structural approach was thought to overlook too many human realities. The human approach suffered on two counts: It failed to establish a broad framework for understanding organizations and many of its core assumptions about human behavior in organizations were not verified by empirical research. As these approaches to organizations were found wanting, analysts discovered the systems framework.¹

Coleman and Palmer define a system as consisting of a set of objects together with the relationships between them. To qualify as a system, the various objects must be bonded together in some way and be different from their surroundings. Organizational systems consist of sets of people, objects such as equipment, and activities that are related to one another and can be distinguished from other sets.²

¹Coleman and Palmer, "Organizational Application of Systems Theory," p. 78.

²Ibid.

General systems theory was actually proposed in 1937 with the ideas of Ludwig von Bertalanffy and finally achieved recognition in general management theory in the 1960's. Wren believes the systems framework represented a quest for a general theory of management. Throughout history man has observed orderliness in nature. As man designed his organizations, he sought the orderliness in their operation that he observed in nature.¹

Del Mar suggests that the complexity of business has led to the need for the systems approach to managing business. He states that the evolution of the systems concept seems generally to have followed that of business organizations growing in complexity and multiple objectives. Beginning as a simple expression based primarily on the need for cooperation and coordination to increase profits, the concept grew. Today it includes the recognition of the many internal and external "publics" that need to be considered if "optimum" results for the organization as a whole are to be realized.²

Murdick and Ross concur that the need for the application of the systems approach to managing has arisen through the increasing complexity of business. This complexity is due to greater size, more complicated forms of organization, more environmental restraints, and accelerating change in technical and information factors.³ Problems confronting decision makers have become more complex by the addition of new constraints

¹Wren, Evolution of Management Thought, p. 485.

²Del Mar, "An Investigation Into the Origin of the Systems Concept," p. 116.

³Robert G. Murdick and Joel E. Ross, Information Systems for Modern Management, Second edition, (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1975), p. 17.

such as pollution control, more stringent product liability laws, and a more observant public.

Murdick and Ross have developed a model to illustrate the contrast between the classical approach to organization and the fundamental premise of the systems approach. This premise is the focus on the design of the whole as distinct from the design of components. As shown by their model, Figure 1, the heavy solid line indicates the authority relationships and hierarchical structure of the classical organization. Concern is with formal authority relationships and the chain of command rather than with the interrelationship of the parts. The dotted lines show the same organizational structure with the parts joined in a system by means of information flow and the systems approach to organization and management.¹

If personnel, manufacturing, and marketing are considered as departmental systems of an organization and personnel procurement, records, and evaluation are considered as functional group systems within the Personnel Department, two basic characteristics of the systems approach can be noted. The first is that systems vary in size. The second is that larger systems can be viewed as being made up of smaller systems. These smaller systems are often referred to as subsystems.²

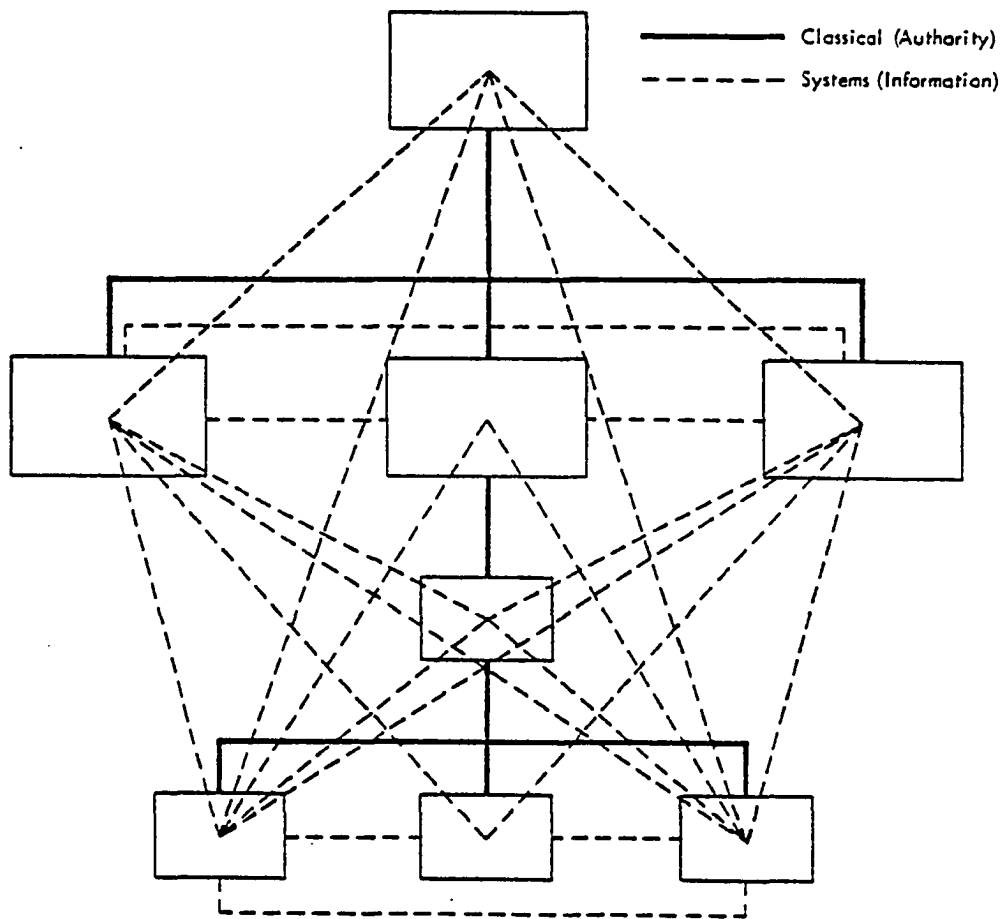
Heller clarifies the concept of a hierarchy of systems utilizing an approach known as "the ladder of abstraction." In the study of semantics the approach involves the arranging of words or terms in descending order of abstraction with each lower level being included in the level

¹Murdick and Ross, Information Systems for Modern Management, p. 11.

²Del Mar, "An Investigation Into the Origin of the Systems Concept," p. 29.

FIGURE 1

THE CLASSICAL AND SYSTEMS APPROACH TO
ORGANIZATION AND INFORMATION FLOW¹



¹Murdick and Ross, Information Systems for Modern Management,
p. 11.

immediately above it. As one goes down this ladder, each level becomes more definitive and concrete. What is a component or a subsystem at one level becomes a system at the next lower level. The function of any of the systems is included in and ancillary to the function of the system at the next higher level.¹

According to Greenwood, the systems approach is different from other approaches to the design or improvement of social institutions. In describing characteristics of the approach, he stated that it aims at considering the situation as a whole rather than from the viewpoint of a single element. The systems approach is holistic (the recognition that the whole is something more than or different from the mere sum of its parts) rather than atomistic. It emphasizes the interrelatedness of elements and events. The systems approach takes cognizance of the temporal quality of life and of the omnipresence and inevitability of change.²

Although the future cannot be predicted with any degree of certainty, Murdick and Ross conclude that there are two characteristics of the managerial environment of the 1980's which are certain. First, there will be change and increasing complexity. Second, this change and increasing complexity will occur at an accelerating rate. The manager of

¹Del Mar, "An Investigation Into the Origin of the Systems Concept," pp. 31-32. See S.R. Heller, Jr., "What is a System," Naval Engineer's Journal, (February, 1968): pp. 24, 27; Gerald Nadler, Work Systems Design: The Ideals Concept, (Homewood, Illinois: Richard D. Irwin, Inc., 1967), p. 3; E.W. Martin, "The Systems Concept," Business Horizons, (Spring, 1966): p. 63; Howard L. Timms, Introduction to Operations Management, (Homewood, Illinois: Richard D. Irwin, Inc., 1967), p. 85; Charles L. Hughes, Goal Setting, (New York: American Management Association, 1965), p. 93.

²James W. Greenwood, Jr., "Nature and Importance of Systems Education," Systems Education Patterns on the Drawing Boards for the Future, (Connecticut: Southern Connecticut State College, 1968), p. 9.

the future who "thinks systems" will be of a breed different from that of the contemporary manager, who is technically oriented or a specialist in some functional area. The new breed of manager will be a generalist who understands the need to bring the diverse elements of the organization together into a system.¹

Greenwood concludes that managers of today and of the future--in industry, government, and education--must be prepared to apply the systems approach or perish.² The development of the systems approach to organization and management makes evident the need for a study which will identify those personal and work characteristics which are necessary to effectively assume entry-level employment in today's changing organizations. The extent of change and its consequences in the world of work warrant continuous and careful examination.

Effects of Technology on the Office Environment

A study of the development of office management conducted by Jones traced the trends in office management and made predictions concerning the direction office management will take in the future. The study revealed that as the office becomes more automated, innovations and strong trends become more apparent than at any other period. Mounting costs have led top management to focus increased attention on ways to economize office operations. Technology has increased the integration of office activities and has led to a greater degree of centralization. Refinements in tabulating equipment and electronic computers affect

¹Murdick and Ross, Information Systems for Modern Management, p. 12.

²Greenwood, "Nature and Importance of Systems Education," p. 10.

drastically the manner of computing, recordkeeping, communicating, and planning and controlling systems. Automation also affects the work force by upgrading requirements for many office jobs. Technological advancements have contributed to more efficient handling of data.¹ Yet, low office productivity shows an apparent lack of updated training to meet the innovations of the automated office.

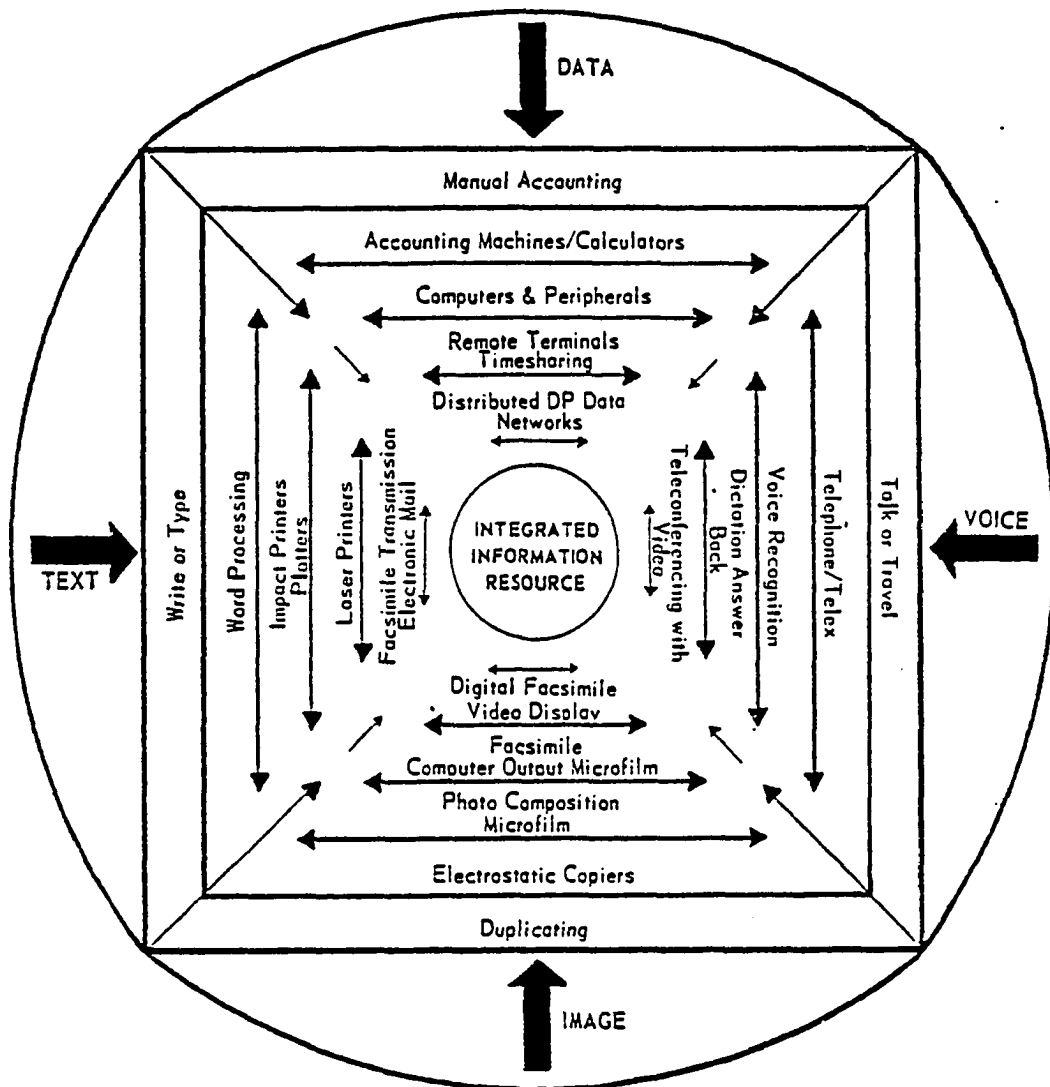
Holmes, in describing the office of the future as he sees it, asserts that technology is crossing traditional organizational boundaries. Ways must be adopted for people to cross these organizational boundaries easily, effectively, without being limited by parochial departmental mentality. The office of the future will involve a convergence of traditional technologies. As a result of this convergence, the boundaries between the technologies will become blurred, vague and indistinct. Image, voice, text, and data will no longer be separate disciplines. Holmes claims that the new technologies do not fit into the traditional organizational boxes. He illustrates this blurring of technological boundaries through utilization of Figure 2. Holmes believes that technologies will blend into a new hybrid technology which he terms the management of integrated information resource.²

The increasing pace of technological change and economic growth in modern industry daily create new challenges and opportunities for American business. Each of these challenges and opportunities brings

¹Catherine M. Jones, "Trends in Office Management as Revealed in the Literature, 1913-1962, with Implications for the Future of Office Management and for a College Curriculum," (Ed.D. dissertation, University of Colorado, 1964), p. 381.

²Fenwicke W. Holmes, "IRM: Organizing for the Office of the Future," Journal of Systems Management, (January, 1979), pp. 24-31.

FIGURE 2
CONVERGENCE OF INFORMATION TECHNOLOGY¹



¹Fenwicke W. Holmes, "IRM: Organizing for the Office of the Future," p. 31.

with its heavy demands on a company's resources, especially its most essential resource--people. Neuner reports that it is the workers of a company who must solve today's problems, cope with tomorrow's concepts, and anticipate the trends of the day after tomorrow. To do this, employees must be well-educated people with the skills and energies needed to meet these demands. A company's people must be creative and flexible; otherwise, they will be unable to function in the modern industrial world.¹ Educators preparing future office employees should develop programs which stress not only the skills necessary for office work but also characteristics related to creativity and flexibility.

Matthies writes that the few great systems that are running in business organizations are people-oriented systems, not computer-oriented systems. The computer is a great tool, but it is not the most vital element in a system. The people who work within the system, who run it day by day, are the single vital element. Matthies asserts that a good system can exist in a business without a machine, but a good system cannot possibly exist without well-informed people to use it. He lists four general groups of people who function within today's computer-related systems activities. The groups are systems analysts; programmers; computer operators, including data entry personnel; and support personnel which includes librarians, maintenance personnel, clerks, secretaries, training specialists, and documentation people.² Many of these personnel

¹John J.W. Neuner, et al, Administrative Office Management, Sixth edition, (Cincinnati, Ohio: South-Western Publishing Co., 1972), p. 441.

²Leslie H. Matthies, The Management System--Systems Are For People, (New York: John Wiley and Sons, 1976), p. 203.

receive their basic training and education through business and office education programs. Office education programs must be structured to provide well-informed, competent employees to function within the systems oriented business office of today.

Connell agrees that people are the key ingredient in the office. He writes that any attempt to introduce technology into the office has had to recognize the importance of office employees. Today's office personnel are seeking greater job satisfaction. They are no longer willing to put up with drudgery and routine, monotonous jobs. Office personnel want intellectual stimulation and a feeling of participating in the essentials of the enterprise.¹

Clearly, the growing complexity of business organizations is resulting in changing office procedures and affecting office personnel. The results of a study reported in Modern Office Procedures reflect that changing office jobs, coping with paper, and the proliferation of electronic equipment were the main concerns of office executives in 1979. Office executives listed keeping abreast of current developments in advanced office technologies and keeping office employees trained in the newer technologies as two major challenges in office administration. The study also concluded that the proper utilization of people in conjunction with support functions and the reduction of repetitive, time-consuming tasks by clerical personnel through automating those functions were areas that should receive attention. The study reported that the process and

¹Connell, "The Office of the Future," p. 7.

challenge presented by change and getting people involved in this process of change were significant challenges to be met in 1979.¹

The study conducted by Modern Office Procedures asked the respondents how office jobs will vary to accommodate the changes taking place in the office in the next five years. The respondents were also asked what skills will be required to handle these changes in office jobs. Respondents indicated there will be a trend toward more functional specialists to accommodate the changes taking place in the office. The specialist will complete the total job process from data origination to the final resolution of the transaction. Personnel skills must be upgraded to operate the more complex systems. Employees will need an understanding of the total office operations. A need to understand rudimentary skills, some degree of computer logic, and a basic knowledge of communications terminology and the English language were listed by the executives as the skills required to handle today's office assignments.²

Many statements in recent literature show concern on the part of business educators for a better understanding of the changes taking place in the business world and the effect these changes have upon the role of office employees. This study seeks to identify those personal and work characteristics needed by entry-level office personnel in business organizations which are utilizing systems concepts.

¹"Executives Size Up '79," Modern Office Procedures, (January, 1979), pp. 61-66.

²Ibid.

Components of Office Work

The components of office work and the resultant capabilities required for the performance of office work have been the subject of several studies. Perkins analyzed individual office tasks performed by employees working in various size offices in the twelve Standard Industrial Classifications. The research identified capabilities required for the performance of modern office work. From the analysis, thirteen composite clusters of tasks performed by office workers were identified. Individual office tasks were then listed in rank order and clustered within these major categories of tasks. The categories developed by Perkins included typewriting; operating office equipment; taking dictation and transcribing; mailing; filing; communicating; clerical operations; securing data; using mathematics; financial and recordkeeping duties; editing; meeting and working with people; and miscellaneous. Perkins found that performance skills represented only a portion of the office worker's function. Workers performed a variety of other activities depending upon the job classification.¹

Utilizing the thirteen clusters of office tasks developed by Perkins, Matthews identified those capabilities required for modern office work. Data from three sizes and twelve industrial classifications of businesses were analyzed to determine significant knowledges and tasks which office employees are required to perform. The capabilities identified were then used in establishing competencies needed by students in an office occupations program. Through statistical analysis, Matthews

¹Edward A. Perkins, F. Ross Byrd, and Dennis E. Roley, Clusters of Tasks Associated with Performance of Major Types of Office Work, (Washington, D.C.: United States Department of Health, Education, and Welfare, 1968), p. 204.

categorized the competencies into two groups. The first group contained competencies that were based on office tasks rated important by 50 percent or more of the respondents. This group of competencies was categorized as needed basic competencies. The second group of competencies, categorized by Matthews as desirable basic competencies, was rated important by at least 30 percent of the respondents.¹

The components of office work which could be considered basic to most beginning and intermediate levels of office work were identified and analyzed by Erickson. In addition to identifying the basic components of office work, the components were also ranked in order of their frequency. The ten components in descending order of their frequency were: Communicating with others - 90 percent; sorting, filing, and retrieving - 71 percent; typewriting - 49 percent; checking, computing, and verifying - 47 percent; collecting and distributing - 21 percent; operating business machines (other than typewriters and automatic data processing equipment) - 18 percent; operating automatic data processing equipment - 14 percent; taking dictation - 10 percent; supervising, planning, and training - 3 percent; and analyzing procedures and flow charting - 3 percent.²

Lutz wrote that office jobs are changing rapidly. Because of this rapid change people are not always aware of the types of jobs that will be available in the future. To possess all the specialized training needed for future jobs may be impossible. Lutz concluded that the most

¹Anne L. Matthews, "Competencies Needed for Entry-Level Positions by Graduates of South Carolina Office Occupations Programs Based on an Analysis of Selected Components of Office Work," (Ed.D. dissertation, University of South Carolina, 1975), p. 197.

²Lawrence W. Erickson, Basic Components of Office Work--An Analysis of 300 Office Jobs, Monograph No. 123, (Cincinnati, Ohio: South-Western Publishing Co., 1971), p. 31.

effective educational preparation for jobs should include high levels of basic knowledge that can be adapted to changing job requirements. Job skills and ability can then be adapted to specialized areas.¹

Requirements of Office Personnel

Plainly, the role of office personnel is affected by increasing technological advancements. Several studies investigating office procedures and the secretarial role were reviewed.

A survey conducted by Wagoner endeavored to determine the effects of the changing world of work upon the role of secretarial personnel. The survey also attempted to determine the significance that such changes may have for the educational preparation of secretaries. Results of this study revealed that the secretary performs two types of duties. There are clerical or general duties performed by the secretary in the capacity of assisting the executive. The second type of duties performed by the secretary are those more narrowly defined as secretarial duties.²

The comments of the survey respondents suggested three directions of change in the role of the secretary. First, the secretary is performing more of the duties formerly performed by the executive. This is necessitated by the increased demands placed upon the executive's time and includes such duties as correspondence and handling people. Second, the pace in the business office is increasing and greater emphasis is being placed on speed of operation. The third direction of change is that a

¹Carol Lutz, "Basic Skills in the Futuristic Office," The Balance Sheet, (April, 1979): p. 304.

²Kathleen P. Wagoner, "The Role of the Secretary in a Changing World: An Analysis of the Duties and Functions Performed by the Secretary," (Ph.D. dissertation, The University of Iowa, 1967), p. 370.

number of duties formerly performed by the secretary are now assigned to specialized departments such as bookkeeping and accounting. The secretarial functions and duties used in the survey by Wagoner were those selected from earlier studies, which served as the basis for the evaluation of change. These studies included Charters and Whitley (1924), Nichols (1934), Place (1954), Young (1954), and Noyes (1960).¹

Bryce analyzed job activities and personality traits required in office occupations. The results revealed that the ten duties most frequently performed by secretarial personnel were: Answer the telephone; open, sort, and distribute mail; meet callers; make and record appointments; prepare material for filing; file by alphabetic filing; type from dictated notes; take dictation of letters; keep a card file; and type from rough-draft copy. All of the analyzed personality traits rated high in the secretary's personal qualifications. A summary of the traits most frequently needed by the secretary were ranked as follows: Courtesy; poise, tact, adaptability, personal pleasantness, patience, and self-control.²

Paddock studied the nature of the need for the development of personnel for high-level secretarial positions. Paddock found the assignments of the secretary were in the areas of communications, management of the office, and personal assignments for the executive. Secretarial and machine skills were needed as well as competency in English, both written

¹Kathleen P. Wagoner, "The Role of the Secretary in a Changing World: An Analysis of the Duties and Functions Performed by the Secretary," p. 370.

²Mary Kevin Bryce, "An Analysis of Job Activities and Personality Traits Required in Office Occupations of Secretarial Graduates," (M.A. thesis, Catholic University of America, 1958), p. 108.

and spoken. Other desirable competencies were in the areas of human relations, mathematics, and accounting. The most important personal trait was discretion. The traits of pleasantness, poise, judgment, and congeniality were also considered important by the executives and secretaries surveyed.¹

As early as 1957, a job analysis and time study of activities and responsibilities of secretaries was conducted by Casebier. Using a stop watch and time study sheets, the researcher determined the amount of time secretaries devoted to their activities during a typical working day. In the fifty days timed, the secretaries were engaged in forty-seven different duties or activities. Of the forty-seven activities, ten required three percent or more of the total time. Among the major duties were typewriting, taking dictation and transcribing shorthand notes, using the telephone, handling the mail, conferring with the supervisor, filing and retrieving, and composing and typewriting letters. The study revealed that the secretary spends sixty-nine percent of work time engaged in the ten major duties. Thirty-three percent of the secretary's time was spent at the typewriter.²

Reiff conducted a study to determine the requirements for entry-level employment in word processing centers in New York City with implications for secondary school business education curricula in the New York City Metropolitan Area. Results of the study revealed that a majority of

¹Harriet L. Paddock, "The Nature and the Need for the Development of Personnel for High-Level Secretarial Positions," (Ed.D. dissertation, Indiana University, 1967), p. 263.

²Virginia E. Casebier, "A Time Study of Activities and Responsibilities of Secretaries with Implications for the Training of Prospective Secretaries," (Ph.D. dissertation, Northwestern University, 1957), p. 119.

business educators were not familiar with the concept of word processing and of those educators who were familiar with the concept, most did not teach word processing skills per se. Other results of the study indicated that a high school education is sufficient for a majority of entry-level correspondence secretarial positions. Almost all company representatives included within the study indicated that their employees were deficient in spelling, grammar, and punctuation skills.¹

Whelan reports that educators who are responsible for the preparation of office personnel need to continually evaluate their curriculum offerings to insure that they are meeting the needs of their students. It is important for graduates to have a proper perspective of what is important or unimportant to occupational success. Research conducted by Whelan attempted to determine whether there were significant differences in the way practicing professional secretaries and prospective secretaries perceived the importance of selected secretarial duties and personal traits. Conclusions revealed that the professional secretaries believed that personal traits were relatively more important for success than were secretarial duties. The prospective secretaries did not consider personal traits more important for success than secretarial duties. The findings revealed also that both professional and prospective secretaries considered the ability to follow directions and instructions as very important for

¹Rosanne Reiff, "Entry-Level Job Qualifications and Employee Attitudes in New York City Word Processing Centers and Implications for Secondary School Business Education Curricula in the New York Metropolitan Area," (Ph.D. dissertation, New York University, 1974), p. 249.

occupational success. Both groups agreed that loyalty to the employer was very important.¹

Education for Systems Employment

As a result of the rapid rate of change in today's office procedures, several authors have addressed educational changes. These educational changes are necessary so that programs designed to prepare future office employees may keep pace with adjusting job requirements.

The educational systems in the Nation are under new pressures. Crucial changes bearing upon this problem have been noted in many recent studies. These changes are listed by Roney and Bradey in their study of occupational education beyond the high school in Oklahoma. These changes include:

1. Revolutionary discoveries in science and technology.
2. Decreases in unskilled jobs and increases in semiskilled, skilled, and technical categories.
3. Disappearance of many traditional jobs, while complex machines and processes are creating new ones.
4. More trained manpower needed at a faster rate than the public and private institutions can supply them with adequate preparation.
5. Changes in industry, business, and agriculture signaling for additional, highly trained workers as well as the ² retraining of those whose skills have become obsolete.

¹Thomas R. Whelan, "The Relative Importance of Secretarial Duties and Personal Traits," (Ph.D. dissertation, The University of North Dakota, 1975), p. 83.

²M.W. Roney and P.V. Bradey, Occupational Education Beyond the High School in Oklahoma, (Stillwater, Oklahoma: Oklahoma State University Research Foundation, 1967), p. 2.

Roney and Bradey maintain that educational programs must be keyed to changing occupational requirements and to the development of human resources. In this manner, an economy can be prevented which is characterized by jobs requiring educated, skilled people, yet the people available for the jobs are too poorly trained to perform adequately.

Houser and Hershey showed concern that curricula in many schools emphasize the secretarial thrust--perhaps at the expense of broader administrative concerns. In a study, the authors examined the degree to which teachers are prepared to discuss job analysis, work measurement, office cost control, and employee selection procedures and instruments. The study concluded that the extent to which office operations will be improved in the future may well depend upon the active participation by business teachers in assessing and designing office support systems. A first move on the part of educators might be modification of business education and office administration curricula to reflect a strong management emphasis and increased study of office systems and personnel. This modification would be for future business educators as well as managers. Graduates of such programs should be able to analyze incisively the multifaceted concerns related to effective office personnel and support system administration.²

Murdick and Ross state that education is the only answer for achieving the potential of technology. The lack of systems education in the curriculum can be attributed to two reasons. First, the majority of

¹M.W. Roney and P.V. Bradey, Occupational Education Beyond the High School in Oklahoma, p. 2.

²Gene L. Houser and Gerald L. Hershey, "Training and Development of Office Employees: Implications for Business Educators," Business Education Forum, (April, 1976), pp. 19-22.

those persons qualified to teach in the systems area are practitioners, having learned their trade on the job. They are unlikely to enter the teaching profession. Schools cannot find qualified or acceptable faculty members. Second, the subject matter of information systems design and related matter is ill-defined in the same manner as management. The systems approach is a complete break from the old functional and "experience" approach to the study of business. Until the subject matter is codified and organized into some recognizable body of principles, it will remain a difficult area to teach.¹

Several studies were reviewed which identified training and educational needs of systems personnel. A review of these studies was necessary to determine those components of systems work deemed important through research. From these studies, the initial list of personal and work characteristics utilized by entry-level systems support personnel was developed.

One of the most difficult problems facing the academic community is the development of new curricula and the updating of present ones to meet the needs of industry. A survey conducted by Kerzner attempted to gather input from practicing project managers and systems managers as to what coursework and information should be included in curricula in project and/or systems management at the graduate level. The responses to the questionnaire implied that both groups surveyed believed that academia could not develop systems managers but should merely stress applications of the fundamental tools necessary to successfully manage resources.²

¹Murdick and Ross, Information Systems for Modern Management, p. 546.

²Harold Kerzner, "Training Systems Managers," Journal of Systems Management, (December, 1978), pp. 23-27.

In writing about systems education, Sawatzky stated that the continuing rapid growth of information processing underscores the critical need for well-educated systems analysts. The systems student should have had considerable background in such areas as forms design, record and file design, systems flow charting, decision tables, work simplification, work measurement, and layout. These tools may be viewed by some as mundane details to be learned when needed; yet, Sawatzky believes a person can hardly build concepts and develop generalizations without an adequate base.¹

Idema established general requirements for systems positions. In order to develop an organizational career program and identify specific job classifications, the Idema plan establishes two main avenues of planned career development and concentrates on four major areas of qualification emphasis. These areas include: Technical and professional skills and knowledge; individual skills; interpersonal skills; and managerial organizational skills and knowledge. As a group, the spectrum of requisite performance and qualifications levels can be effectively evaluated using these measures to closely control and manage all movements along the career ladders.²

Shrout conducted research to identify the task-related competencies used by information systems analysts in the performance of systems work. The study also sought to identify the competencies needed for job performance at the present time and five years in the future. Findings

¹Jasper J. Sawatzky, "Systems Education in the Colleges," Journal of Systems Management, (February, 1972), p. 21.

²Thomas H. Idema, "Systems Career Path Development," Journal of Systems Management, (April, 1978), pp. 30-35.

of the study indicated that a formal college education is becoming a necessity for the systems analyst. The findings emphasized the need for analysts who possessed communication skills for effectively working with persons located at all levels of the organization. Shrout concluded from the study that the education required for analysts should provide both liberal knowledge and specialized knowledges in systems concepts, theories, and procedures.¹

Summary

This chapter has attempted to establish a theoretical base for the problem through a review of related research studies. It has also summarized an extensive investigation into journal articles that have been published in areas related to the personal and work characteristics needed by office personnel entering the world of work in business offices which utilize the systems approach to organization and management of the firm.

The chapter reflects the increasing pace of technological advancements and growth in modern industry. It has addressed the resulting challenges and opportunities for business organizations. Change is taking place in the theories of managing business organizations as a result of the increasing complexity of business due to greater size, more complicated forms of organization, and more environmental restraints upon business. The systems approach, with its viewpoint of the whole organization rather than a single element, emphasizes the interrelatedness of elements and events. Systems concepts provide an approach to management

¹Shrout, "A Study of Job-Related Competencies Used by Information Systems Analysts," 1970.

which enables bringing the diverse elements of the organization together into a more manageable system.

The growing complexity of business organizations is resulting in changing office procedures. Some studies reviewed indicated that the office is in transition, assuming a greater scope in its role as a place where management interacts with a company's information network. Other studies reflected that automation has increased the integration of office activities and is blurring the boundaries between disciplines.

Still other studies which were reviewed dealt with the need for upgrading the requirements of office jobs. Findings in the literature indicated the recognition of the importance of the role of the employee in successful systems. Research provided evidence of the concern with which authors view the necessity for teaching the competencies needed by office employees.

The literature and research prepared by, or sponsored by, professional organizations such as the Association for Systems Management indicated there is a need for educational institutions to keep attuned to the changes in occupational requirements. These reports reflect a concern for improvement in curricula, teaching methods, and teacher qualifications. There is also an implication from the studies that business education and office administration curricula should reflect increased study of office systems and personnel.

Other studies examined the qualifications of systems analysts and systems education. The rapid growth of information processing underscores the critical need for well-educated systems analysts and systems support personnel.

As the modern business office adjusts to its changing environments, personal and work characteristics necessary to effectively assume the job responsibilities within these offices also change. A need exists for additional inquiry to determine the personal and work characteristics required of entry-level office personnel employed in business organizations which utilize systems concepts in their approach to organization and management. This study attempts to fill this need.

The methods used in the research to accomplish the purpose of the study are set forth in Chapter III.

CHAPTER III

METHODOLOGY

Introduction

A search of the available literature indicated that limited research had been completed to determine the personal and work characteristics desired of prospective employees for business office positions in organizations which utilize systems concepts. The majority of related studies which have been conducted have been concerned with the needs of clerical employees, systems analysts, and the requirements of traditional office jobs.

For business education to maintain its relevancy, the needs of its students, the business community, and society must be met. To enable business educators to recognize these needs, research must be conducted to make possible the evaluation, development, and revision of the curriculum. Only through this means can business education keep abreast with the expectancies and needs of the world of work.

The research for this study is designed to obtain and synthesize the judgments of those persons in a supervisory position in business organizations which utilize systems concepts. Through this synthesizing of judgments the importance of selected competencies to entry-level office and support personnel job performance may be determined.

To obtain the judgments of those persons employed in systems oriented organizations, a survey was deemed suitable. A questionnaire

was constructed for use in obtaining data on the personal and work characteristics needed by entry-level office and support personnel.

Questionnaire Development

The purpose of the questionnaire was to obtain an adequate data base for objective and statistical analysis of the personal and work characteristics systems practitioners believed relevant for job-entry into office and systems support personnel positions.

Steps recommended by Hillestad were adopted to develop a valid, reliable survey instrument most likely to encourage responses from the study sample. Hillestad recommended that one:

1. Visualize the respondents so as to make the questions as clear and specific as possible.
2. Group together questions dealing with each aspect of the study.
3. Arrange questions in either a psychological or logical order.
4. Make apparent that the questions are related to the purpose of the study.
5. Use an easy-to-answer format.
6. Design an attractive questionnaire.
7. Supply clear, complete directions.¹

The questionnaire in this study was divided into eight categories with personal and work characteristics listed under each category. The eight categories were: Total Systems Concepts, Interpersonal Relationships, Planning Skills, Data Collection Skills, Analytical Skills, Data Analysis

¹Mildred Hillestad, Research: Process and Product, (St. Peter, Minnesota: Delta Pi Epsilon Service Bulletin No. 2, 1977), pp. 42-60.

Skills, Cost Analysis of Alternatives Skills, and Skills in the Presentation of Data.

To meet the Hillestad criterion of an easy-to-answer format the data collection instrument was structured to allow for the check-off of responses. Hillestad states that check-off items in which the respondents mark their answers in boxes or blanks are very effective when a complete list of alternatives are supplied.¹ An "other" option was supplied at the conclusion of each category for those respondents who believed additional characteristics or comments should be included under that category.

The respondents were asked to check only one of five possible responses for each characteristic listed on the instrument. The possible responses were: Mandatory, the characteristic is considered essential or vital to adequately perform the job; very important, the characteristic is not considered essential to job performance but is considered to be of significant value; moderately important, the characteristic is considered to be of average importance to the performance of the job; unimportant, the characteristic is considered to have minor value to job performance; and not applicable, the characteristic is considered to have no value to job performance.

In addition to securing the supervisors' judgments concerning the importance of the personal and work characteristics, other types of information were sought by means of the survey. These questions were kept to a minimum and were limited to data that would have direct bearing on the research. Information was solicited on the industrial classification of the firm, the number of employees within the firm, the number of

¹Hillestad, Research: Process and Product, p. 49.

entry-level personnel, the projected need for entry-level personnel by 1985, and the minimum educational level desired of entry-level office personnel. Other information sought from the respondents which might have an effect on the responses was the age of the respondent and the educational background of the respondent.

The list of personal and work characteristics used in the data collection instrument was developed from several sources. The instrument used by Shrout¹ utilized structure and items believed relevant to this research. The analysis of office jobs which resulted in listed components of office work by Erickson² was also deemed relevant to this study. The clusters of office tasks developed by Perkins³ were studied and utilized in the construction of the instrument. Journal articles and publications in the systems analysis field were also studied for components of systems work and from these articles and publications personal and work characteristics were incorporated into the questionnaire. Responses from a jury of experts consisting of selected faculty members from The University of Oklahoma and systems analysts were utilized for adjustments and additions to the trial questionnaire. Revisions were made based upon the recommendations of this jury of experts.

The questionnaire was reproduced using a method to insure neat, legible copies. The questionnaire was then submitted to the pilot sample

¹Shrout, "A Study of Job-Related Competencies Used by Information Systems Analysts," 1970.

²Erickson, Basic Components of Office Work--An Analysis of 300 Office Jobs, 1971.

³Perkins, Byrd, and Roley, Clusters of Tasks Associated with Performance of Major Types of Office Work, 1968.

who were not included in the study sample. The purpose of the pilot study was to test the survey operations, including the questionnaire. Founded upon the results of the pilot study, the questionnaire was revised and duplicated for distribution to the study sample.

Study Sample

The first step in the selection of the study sample for the research project was to obtain the cooperation of the Oklahoma City Chapter of the Association for Systems Management and the Oklahoma City Chapter of the Data Processing Management Association. The Association for Systems Management is an international professional organization for the advancement and self-renewal of systems analysts throughout business and industry. Founded in 1947, the Association in 1976 had a membership of over 11,000 professionals dedicated to the interchange of information in the field of systems analysis. Membership in the Association is open to those administrative executives and specialists in systems management positions who can benefit from a dialogue of professional knowledge with their contemporaries in the techniques of effective systems operations.

The Data Processing Management Association has international scope, representing approximately 23,000 members in over 275 local chapters. The Association was founded in 1950 and provides for direct contact among data processors engaged in the study, development and operation of data processing equipment and related processes. Local groups are stimulated to discussion of new equipment, systems and procedures and other technical matters of interest to data processing personnel.

Van Dalen and Meyer maintain that no specific rules on how to obtain an adequate sample have been formulated, for each situation presents

its own problems. In general, three factors determine the size of an adequate sample: The nature of the population, the type of the sampling design, and the degree of precision desired.¹

Minium writes that a sample is simply a part of a population. Numerically a sample could be as small as a single element, or it could consist of all but one element of the population. There is nothing inherent in the concept of a sample which specifies the way in which it is to be selected from the population.²

The specified population for this research study was the membership of the Oklahoma City Chapters of the Association for Systems Management and the Data Processing Management Association. Because the entire population was small numerically, the decision was made that the sample would consist of a representative in a supervisory position from business organizations represented by employee membership in either of the Associations. The determination was made that this sample of thirty-two representatives would yield a statistically accurate picture of the judgments of the entire population.

The persons who comprise the sample used in this study are prepared to evaluate the work performed and effectively judge those personal and work characteristics necessary to satisfactorily perform systems oriented job duties. The sample should provide the data necessary to determine the entry-level characteristics considered important by

¹Deobold B. Van Dalen and William J. Meyer, Understanding Educational Research, (New York: McGraw-Hill Book Company, 1966), p. 298.

²Edward W. Minium, Statistical Reasoning in Psychology and Education, (New York: John Wiley and Sons, Inc., 1970), p. 12.

business organizations which utilize systems concepts and are located in the Oklahoma City Standard Metropolitan Statistical area.

A pilot study was conducted using a pilot sample consisting of individuals employed in the systems profession. This pilot sample consisted of ten members of the Oklahoma City Chapters of the Association for Systems Management and the Data Processing Management Association. The purpose of this pilot study was to test the operations of the survey, including the questionnaire, to enable the researcher to make needed revisions or adjustments to the study design.

During July, 1979, the pilot study questionnaire was personally delivered to the members of the pilot sample. These individuals were encouraged to make notes, comments, and suggestions about the questionnaire or study and return them with the completed questionnaire as soon as possible. By August 1, 1979, a 100 percent return on the pilot study had been received.

The completed questionnaires were coded utilizing the formats developed concurrently with the development of the questionnaire. Computer cards were key-punched and the programs were run.

Method of Statistical Analysis

In order to statistically analyze the cumulative responses of the sample, the following technique suggested by statisticians at The University of Oklahoma was used to determine the most important personal and work characteristics. A numerical value was assigned each of the five choices available to the respondents as follows:

Mandatory	1.000
Very Important	2.000
Moderately Important	3.000
Unimportant	4.000
Not Applicable	5.000

Utilizing frequency counts and the assigned numerical values, a mean response was then computed. The mean was used to rank each of the 106 characteristics. This ranking created a continuum ranging from +1.000 representing a perfect rating of essential or vital to job performance to +5.000 representing a rating of no value to job performance.

Computer Programs Utilized

The data were analyzed utilizing computer programs from the Statistical Package for the Social Sciences, second edition (SPSS). The first task of data analysis is to determine the basic distributional characteristics of each of the variables to be used in subsequent statistical analysis. Information on the distribution, variability, and central tendencies of the variables provides information required for selection of subsequent statistical techniques. SPSS subprogram Condescriptive provides the user with the capability of obtaining the mean, standard deviation, and other descriptive statistics for any set of variables in a file which is more or less continuous. This SPSS subprogram was selected because it provides various summary statistics on categories too numerous to examine individually.¹

The second SPSS subprogram selected was Crosstabs. Subprogram Crosstabs computes and displays two-way to n-way crosstabulation tables (contingency tables) for any discrete variables. These contingency tables

¹Norman H. Nie, C. Hadlai Hull, Jean G. Jenkins, Karin Streinbrenner, and Dale H. Brent, Statistical Package for the Social Sciences, Second edition, (New York: McGraw-Hill Book Company, 1975), p. 181.

were used to determine the percent of response to each of the five possible ratings of importance for each characteristic.¹

The mean score for each characteristic obtained from the Condescriptive subprogram was utilized in the ranking of the personal and work characteristics and the determination of those characteristics judged important by the respondents. All crosstabulations obtained from the Crosstabs subprogram are available in Appendix C.

As a result of analysis of the data and responses obtained through the pilot study, the determination was made that the study should be continued. No major adjustments or revisions were made in the study operations or in the data collection instrument.

Summary

The purpose of this chapter has been to present the methodology used to collect and analyze the data necessary to achieve the objectives of this study. The chapter has presented the background against which the findings and conclusions can be evaluated.

A description of the steps followed in the development of the data collection instrument was presented. The procedures followed in the selection of the survey sample was presented along with a description of the population and the sample of the study. The pilot study was described and the methods used for the collection and processing of the data were reported.

The statistical procedures to be utilized in the analysis of the data were described. The Statistical Package of the Social Sciences computer programs were discussed. Reasons for the selection of these programs were included in the discussion.

¹Nie, et al. Statistical Package for the Social Sciences, p. 218.

Chapter IV, presents the analysis of the collected data. Results of the statistical procedures used to analyze the data are also given.

CHAPTER IV

PRESENTATION OF DATA

Introduction

The primary purpose of this chapter is to present the data collected to determine personal and work characteristics considered necessary for success as an entry-level office employee in businesses which utilize systems planning and controlling in their approaches to organization and management. The respondents are described through the presentation of the analysis of demographic data. Statistical means representing responses of the supervisors and percents of responses in the three highest ratings for each characteristic are also presented.

A questionnaire was designed to collect data related to 106 characteristics grouped into eight topical areas: Total Systems Concepts, Interpersonal Relationships, Planning Skills, Data Collection Skills, Analytical Skills, Data Analysis Skills, Cost Analysis of Alternatives, and Presentation of Data. Persons employed in supervisory positions in selected organizations within the described population were asked to indicate the importance of each characteristic to the performance of entry-level tasks. The supervisors were instructed to indicate only one of five possible responses for each characteristic.

A total of twenty-nine completed questionnaires were received, coded, and analyzed. This chapter presents the analysis of the collected data.

Respondent Profile

The population for this study was business organizations represented by employee membership in either the Oklahoma City chapter of the Association for Systems Management or the Oklahoma City chapter of the Data Processing Management Association. The respondents were persons employed in systems supervisory positions within these business organizations.

In addition to securing the supervisors' judgments about the importance of the personal and work characteristics, other types of information were sought by means of the survey. This information included: Industrial classification of the firm; the number of employees within the firm, the present number of entry-level personnel, and the projected need for entry-level personnel by 1985. Of the supervisors who returned questionnaires, 51.7 percent represented financial institutions and 48.3 percent represented manufacturing firms. Concerning the size of the firms, 37.9 percent of the respondents were from businesses employing 0 - 250 employees, 27.6 percent from businesses employing 251 - 500 employees, and 34.5 percent from firms with 500 or more employees. Examination of the responses concerning the present number of entry-level office employees in systems departments and the projected need for entry-level employees in 1985, indicated that the respondents predicted an increase in the demand for entry-level employees. This prediction represented an increase of 111 percent in the demand for entry-level employees in systems oriented offices.

Information solicited from the respondents which might have an effect on the responses included the educational background and age of the respondents. Data concerning the educational background of the

respondents elicited the following information. Master's degrees are held by 10.3 percent of the respondents; 31.0 percent hold a bachelor's degree with majors in business; 17.3 percent hold a bachelor's degree with a major emphasis other than business; 27.6 percent of the supervisors attended college but did not graduate; and 13.8 percent listed high school graduation as their highest level of formal education. Twenty-one percent of the respondents indicated that they had received additional training beyond formal education. Additional training most frequently mentioned was that provided by the United States' Armed forces and/or by computer manufacturer's training seminars.

Concerning the age of the respondents, the data indicated that 27.6 percent of the respondents were between the ages of 25 and 34; 41.4 percent were between the ages of 35 and 44; and 31.0 percent were between the ages of 45 and 54. None of the respondents was 55 or older.

Analysis of Personal and Work Characteristic Data

The supervisors' judgments of the importance of each of the personal and work characteristics for success in performing entry-level tasks are reported in topical areas. The topical areas will be presented individually and will be indicated by side headings. These side headings are: Total Systems Concepts, Interpersonal Relationships, Planning Skills, Data Collection Skills, Analytical Skills, Data Analysis Skills, Cost Analysis of Alternatives, and Presentation of Data. The eight topical areas were selected after interviews with systems analysts and the pilot study.

Analysis of each characteristic is reported by use of a statistical mean. Because the characteristics were rated on a scale of 1 to 5 (5 being

of no importance), the mean responses range from a +1.000, representing a rating of essential or vital to job performance, to +5.000 representing a rating of no value to job performance. If the statistical mean of a characteristic is less than 3.000 the characteristic will be reported as important. This procedure is consistent with the instructions to the respondents who participated in the study. Tables for each topical area have been developed to report the statistical mean for each characteristic listed within that area. The statistical means are reported in odd-numbered Tables 1 through 15.

Analysis of each characteristic is also reported by use of a percent of response in the mandatory, very important, and moderately important ratings. These are the three highest ratings from the five point scale available for the respondents to record their judgments. The percent of response in these three ratings for each characteristic are reported in even-numbered Tables 2 through 16.

Total Systems Concepts

Eleven characteristics pertaining to the importance of conceptual foundations in systems were presented to obtain information from the systems supervisors concerning their judgment of the importance of foundations in total systems concepts for entry-level employees. Twenty-seven and two-tenths percent (3 of 11) of the characteristics in this topical area received a mean ranking of less than 2.000 and were thus considered mandatory to the performance of entry-level tasks. These characteristics were: (1) a willingness to accept the challenge presented by new equipment and procedures (1.621); (2) a desire to participate in retraining and/or updating systems skills (1.897); and (3) a tolerance for the study

and analysis of routine work (1.966). These three characteristics comprised 23.1 percent of the total characteristics from all topical areas receiving a mandatory rating.

All of the characteristics listed in the Total Systems Concepts grouping received a mean rating of less than 3.000 and were thus considered important to task performance. The characteristics with their statistical means are presented in Table 1.

Foundations in systems vocabulary was judged mandatory by 17.2 percent of the respondents, very important by 27.6 percent of the respondents, and moderately important by 27.6 percent of the respondents. This characteristic received a rate of response of 72.4 percent in the three highest ratings.

Awareness of the interdependencies of office operations was rated mandatory by 6.9 percent of the respondents, very important by 20.7 percent of the respondents, moderately important by 55.2 percent of the respondents, a rate of response of 82.8 percent in the three highest ratings.

The need for entry-level office employees to possess a willingness to accept the challenges presented by new equipment and procedures was judged by 37.9 percent of the respondents to be mandatory and by 62.1 percent of the respondents to be very important. This characteristic received the highest mean rating of the characteristics listed under Total Systems Concepts and received a rate of response of 100 percent in the three highest ratings.

An awareness of subsystem functions within the total system was judged very important by 44.8 percent of the respondents and moderately

TABLE 1
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TOTAL SYSTEMS CONCEPTS CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	To perform at the level of proficiency necessary for job entry and mobility within the firm, the entry-level employee should possess:	
8	Foundations in systems vocabulary	2.655
9	Awareness of the interdependencies of office operations	2.828
10	Willingness to accept challenge presented by new equipment and procedures	1.621
11	Awareness of subsystem functions within the total system	2.828
12	Desire to maintain an awareness of office advancements through current periodicals and literature	2.621
13	Willingness to view alternatives for office procedures	2.138
14	Desire to participate in retraining and/or updating systems skills	1.897
15	Tolerance for study and analysis of routine work	1.966
16	Willingness to participate in experimental office procedures	2.345
17	Willingness and ability to assist others in adjusting to change in office procedures	2.241
18	Willingness to objectively evaluate and understand the necessity of feedback for system improvement	2.138

important by 31.0 percent of the respondents. The rate of response for this characteristic in the three highest ratings was 75.8 percent.

A desire to maintain an awareness of office advancements through current periodicals and literature was rated mandatory by 10.3 percent of the respondents, very important by 37.9 percent of the respondents, and moderately important by 31.0 percent of the respondents; a rate of response of 79.3 percent in the three highest ratings.

The need for entry-level office employees to possess a willingness to consider alternatives for office procedures was rated by 10.3 percent of the respondents as mandatory, very important by 65.5 percent of the respondents, and moderately important by 24.1 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

A desire to participate in retraining and/or the updating of systems skills was judged mandatory by 34.5 percent of the respondents; very important by 41.4 percent of the respondents; moderately important by 24.1 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The tolerance for study and analysis of routine work was rated mandatory by 17.2 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 6.9 percent of the respondents. This characteristic received a rate of response of 96.6 percent in the three highest ratings.

A willingness to participate in experimental office procedures received a rating of mandatory by 6.9 percent of the respondents. Fifty-five and two-tenths percent of the respondents rated this characteristic as very important and 34.5 percent of the respondents rated the

characteristic as moderately important. The rate of response was 96.6 percent in the three highest ratings.

The willingness and ability to assist others in adjusting to changes in office procedures was judged mandatory by 13.8 percent of the respondents, very important by 48.3 percent of the respondents, and moderately important by 37.9 percent of the respondents. The characteristic received a rate of response of 100 percent in the three highest ratings.

The final characteristic listed under the topical area, Total Systems Concepts, was a willingness to objectively evaluate and understand the necessity of feedback for systems improvement. The characteristic was judged mandatory by 17.2 percent of the respondents, very important by 62.1 percent of the respondents, and moderately important by 13.8 percent of the respondents for a rate of response of 93.2 percent in the three highest ratings.

The data indicate that all the personal and work characteristics presented under Total Systems Concepts were important in the judgment of the respondents for entry-level employees in systems oriented business offices. A summary of the percent responses in the three highest ratings to all the characteristics listed under Total Systems Concepts is reported in Table 2.

Interpersonal Relationships

Twenty characteristics were included on the survey instrument to gather information from the systems supervisors about their judgment of the importance of interpersonal relationship skills. Thirty percent (7 of 20) of the characteristics in this topical area received a mean

TABLE 2

SUMMARY OF PERCENT OF RESPONSES TO CHARACTERISTICS
LISTED UNDER TOTAL SYSTEMS CONCEPTS

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
	To perform at the level of proficiency necessary for job entry and mobility within the firm, the entry-level employee should possess:				
8	Foundations in systems vocabulary	17.2	27.6	27.6	72.4
9	Awareness of the interdependencies of office operations	6.9	20.7	55.2	82.8
10	Willingness to accept challenge presented by new equipment and procedures	37.9	62.1	0.0	100.0
11	Awareness of subsystem functions within the total system	0.0	44.8	31.0	75.8
12	Desire to maintain an awareness of office advancements through current periodicals and literature	10.3	37.9	31.0	79.3
13	Willingness to view alternatives for office procedures	10.3	65.5	24.1	100.0
14	Desire to participate in retraining and/or updating systems skills	34.5	41.4	24.1	100.0
15	Tolerance for study and analysis of routine work	17.2	72.4	6.9	96.5
16	Willingness to participate in experimental office procedures	6.9	55.2	34.5	96.6
17	Willingness and ability to assist others in adjusting to change in office procedures	13.8	48.3	37.9	100.0
18	Willingness to objectively evaluate and understand the necessity of feedback for system improvement	17.2	62.1	13.8	93.2

rating of less than 2.000 and were thus considered mandatory to the performance of entry-level tasks. These characteristics were: (1) a best effort rather than a get by attitude (1.483); (2) the ability to cooperate with co-workers in a common effort (1.483); (3) the ability to treat office material with confidentiality (1.655); (4) cheerfulness and a harmonizing attitude toward co-workers (1.793); (5) the willingness to exert extra effort and carry an increased work load as the situation requires (1.931); (6) a respect for authority (1.931); and (7) the ability to effectively use supervision (1.931). These seven characteristics comprised 53.8 percent of the total characteristics from all topical areas receiving a mandatory rating.

All of the characteristics presented in the area of interpersonal relationships received a mean ranking of less than 3.000 and were considered important to task performance. The characteristics with their statistical means are presented in Table 3.

The need for entry-level employees to possess a "best effort" rather than a "get by" attitude was judged mandatory by 55.2 percent of the respondents, very important by 41.4 percent of the respondents, and moderately important by 3.4 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

Cheerfulness and a harmonizing attitude toward co-workers was rated mandatory by 24.1 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 3.4 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

TABLE 3
INTERPERSONAL RELATIONSHIPS CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess:	
19	A "best effort" rather than a "get by" attitude	1.483
20	Cheerfulness and a harmonizing attitude toward co-workers	1.793
21	Awareness of own tolerance level (to avoid stress)	2.103
22	Sensitivity to co-workers' tolerance levels	2.138
23	Sensitivity to the needs of co-workers	2.276
24	Ability to treat office material with confidentiality	1.655
25	Ability to cooperate with co-workers in a common effort	1.483
26	Ability to cope with moderate verbal abuse	2.690
27	Ability to interact with office employees in technical, skilled, and semi-skilled positions	2.103
28	Willingness to exert effort and carry an increased work load as the situation requires	1.931
29	Ability to effectively use supervision (asking for assistance when needed but not relying unnecessarily on supervision)	1.966
30	Respect for authority	1.931
31	Ability to accept and use constructive criticism	2.034
32	Ability to exercise judgment and discretion in interpersonal relationships within the work environment	2.103

TABLE 3--Continued

Reference Code	Characteristic	Statistical Mean
33	Ability to recognize gossip (and/or office jealousies) and understand its detrimental effects within the office	2.379
34	Ability to place performance above personal reaction and/or feelings	2.345
35	Ability to ease tensions in sensitive office situations	2.483
	Capability to develop proficiency in:	
36	delegating duties	2.517
37	directing others	2.517
38	effective teaching	2.517

An awareness of one's own tolerance level was judged mandatory by 6.9 percent of the respondents, very important by 75.9 percent of the respondents, and moderately important by 17.2 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

Possessing a sensitivity to co-workers' tolerance levels was judged mandatory by 6.9 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 20.7 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The need for the entry-level employee to possess sensitivity to the needs of co-workers was rated very important by 72.4 percent of the respondents and moderately important by 27.6 percent of the respondents. The rate of response for this characteristic in the three highest ratings was 100 percent.

The ability to treat office material with confidentiality was judged mandatory by 48.3 percent of the respondents, very important by 37.9 percent of the respondents, and moderately important by 13.8 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The ability to cooperate with co-workers in a common effort was rated mandatory by 51.7 percent of the respondents and very important by 48.3 percent of the respondents. This characteristic was rated by 100 percent of the respondents in the two highest ratings.

The entry-level employee should possess the ability to cope with moderate verbal abuse was judged mandatory by 13.8 percent of the respondents, very important by 34.5 percent of the respondents, and moderately important by 31.0 percent of the respondents. Seventy-nine and three-tenths of the respondents rated this characteristic in the three highest ratings.

The ability to interact with office employees in technical, skilled, and semi-skilled positions was rated mandatory by 3.4 percent of the respondents, very important by 82.8 percent of the respondents, and moderately important by 13.8 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

A willingness to exert extra effort and carry an increase work load as the situation requires was judged mandatory by 17.2 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 10.3 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

The ability to effectively use supervision (asking for assistance when needed but not relying unnecessarily on supervision) was judged

mandatory by 17.2 percent of the respondents, very important by 69.0 percent of the respondents, and moderately important by 13.8 percent of the respondents for a rate of responses of 100 percent in the three highest ratings.

The characteristic, respect for authority, was rated mandatory by 31.0 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 24.1 percent of the respondents. The characteristic received a rate of response of 100 percent in the three highest ratings.

The entry-level employee should possess the ability to accept and use constructive criticism was judged mandatory by 20.7 percent of the respondents, very important by 55.2 percent of the respondents, and moderately important by 24.1 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

The ability to exercise judgment and discretion in interpersonal relationships within the work environment received a rating of mandatory from 6.9 percent of the respondents. Of the respondents, 75.9 percent rated this characteristic as very important and 17.2 percent of the respondents rated the characteristic as moderately important. The rate of response was 100 percent in the three highest ratings.

The ability to recognize gossip (and/or jealousies) and understand its detrimental effects within the office was judged mandatory by 6.9 percent of the respondents, very important by 55.2 percent of the respondents, and moderately important by 31.0 percent of the respondents. The characteristic received a rate of response of 93.1 percent in the three highest ratings.

The ability to place performance above personal reactions and/or feelings was rated mandatory by 13.8 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 34.5 percent of the respondents. This characteristic received a rate of response of 93.1 percent in the three highest ratings.

The characteristic, the ability to ease tensions in sensitive office situations, was rated very important by 55.2 percent of the respondents and moderately important by 41.4 percent of the respondents. The rate of response was 96.6 percent in the three highest ratings.

The capability to develop proficiency in delegating duties was judged very important by 58.6 percent of the respondents and moderately important by 31.0 percent of the respondents. The rate of response was 89.6 percent in these two ratings for this characteristic.

The capability to develop proficiency in directing others was judged very important by 58.6 percent of the respondents and moderately important by 31.0 percent of the respondents for a rate of response of 89.6 percent in the three highest ratings.

The final characteristic presented under the topical area Interpersonal Relationships was the capability to develop proficiency in effective teaching. The characteristic was rated very important by 58.6 percent of the respondents and moderately important by 31.0 percent of the respondents for a rate of response of 89.6 percent in the three highest ratings.

The data indicate that all the personal and work characteristics presented under Interpersonal Relationships were important in the judgment of the respondents for entry-level task performance in systems oriented

business offices. A summary of the percent of response in the mandatory, very important, and moderately important ratings to all characteristics presented under Interpersonal Relationships is reported in Table 4.

Planning Skills

Ten characteristics were included on the survey instrument to gather information from the systems supervisors about their judgment of the importance of planning skills for entry-level employees. Ten percent of the characteristics in this topical area received a mean rating of less than 2.000 and were thus considered mandatory to the performance of entry-level tasks. This characteristic was the capability to develop proficiency in following systems procedures step-by-step (1.862). This characteristic comprised 7.7 percent of the total characteristics from all topical areas receiving a mandatory rating.

All of the characteristics presented in Planning Skills received a mean rating of less than 3.000 and were considered important to task performance. The characteristics with their statistical means are presented in Table 5.

The characteristic, the entry-level employee should possess the capability to develop proficiency in establishing short-term, results-oriented goals, was rated very important by 55.2 percent of the respondents. The characteristic was rated moderately important by 41.4 percent of the respondents for a rate of response of 96.6 percent in the three highest ratings.

The capability to develop proficiency in the application of facts and environmental factors in planning projects was judged mandatory by 10.3 percent of the respondents, very important by 37.9 percent of the

TABLE 4

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER INTERPERSONAL RELATIONSHIPS

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess:				
19	A "best effort" rather than a "get by" attitude	55.2	41.4	3.4	100.0
20	Cheerfulness and a harmonizing attitude toward co-workers	24.1	72.4	3.4	100.0
21	Awareness of own tolerance level (to avoid stress)	6.9	75.9	17.2	100.0
22	Sensitivity to co-workers' tolerance levels	6.9	72.4	20.7	100.0
23	Sensitivity to the needs of co-workers	0.0	72.4	27.6	100.0
24	Ability to treat office material with confidentiality	48.3	37.9	13.8	100.0
25	Ability to cooperate with co-workers in a common effort	51.7	48.3	0.0	100.0
26	Ability to cope with moderate verbal abuse	13.8	34.5	31.0	79.3
27	Ability to interact with office employees in technical, skilled, and semi-skilled positions	3.4	82.8	13.8	100.0
28	Willingness to exert effort and carry an increased work load as the situation requires	17.2	72.4	10.3	100.0
29	Ability to effectively use supervision (asking for assistance when needed but not relying unnecessarily on supervision)	17.2	69.0	13.8	100.0
30	Respect for authority	31.0	44.8	24.1	100.0
31	Ability to accept and use constructive criticism	20.7	55.2	24.1	100.0

TABLE 4--Continued

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
32	Ability to exercise judgment and discretion in interpersonal relationships within the work environment	6.9	75.9	17.2	100.0
33	Ability to recognize gossip (and/or office jealousies) and understand its detrimental effects within the office	6.9	55.2	31.0	93.1
34	Ability to place performance above personal reactions and/or feelings	13.8	44.8	34.5	93.1
35	Ability to ease tensions in sensitive office situations	0.0	55.2	41.4	96.6
	Capability to develop proficiency in:				
36	delegating duties	0.0	58.6	31.0	89.6
37	directing others	0.0	58.6	31.0	89.6
38	effective teaching	0.0	58.6	31.0	89.6

respondents, and moderately important by 41.4 percent of the respondents. This characteristic received a rate of response of 89.6 percent in the three highest ratings.

Understanding the purposes of systems project planning was rated mandatory by 10.3 percent of the respondents, very important by 55.2 percent of the respondents, and moderately important by 31.0 percent of the respondents for a rate of response of 96.6 percent in the three highest ratings.

TABLE 5
PLANNING SKILLS CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess the capability to develop proficiency in:	
39	Establishing short-term results-oriented goals	2.483
40	The application of facts and environmental factors in planning projects	2.517
41	Understanding the purposes of systems project planning	2.276
42	Following systems procedures step-by-step	1.862
43	Compiling directions for subsystem studies	2.690
44	Studying specifically defined systems procedures and diagramming the sequential steps necessary to implement the systems procedures	2.759
45	Planning and performing work analysis without direct supervision	2.517
46	Making work priority decisions when planning a project	2.690
47	Understanding the relationship of office activities to overall performance of the organization	2.552
48	Recognition of the importance of office trends in determining projects to be planned	2.931

The capability to develop proficiency in following systems procedures step-by-step was rated mandatory by 24.1 percent of the respondents, very important by 69.0 percent of the respondents, and moderately important by 3.4 percent of the respondents for a rate of response of 96.6 percent in the three highest ratings. This characteristic received the highest mean rating, 1.862, of the characteristics listed under Planning Skills.

The capability to develop proficiency in compiling directions for subsystems studies was judged mandatory by 3.4 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 37.9 percent of the respondents for a rate of response of 86.1 percent in the three highest ratings.

Studying specifically defined systems procedures and diagramming the sequential steps necessary to implement the systems procedures was rated mandatory by 3.4 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 27.6 percent of the respondents. This characteristic received a rate of response of 75.8 percent in the three highest ratings.

The capability to develop proficiency in planning and performing work analysis without direct supervision was rated mandatory by 10.3 percent of the respondents, very important by 48.3 percent of the respondents, and moderately important by 24.1 percent of the respondents for a rate of response of 82.7 percent in the three highest ratings.

The capability to develop proficiency in making work priority decisions when planning a project was judged very important by 58.6 percent of the respondents and moderately important by 24.1 percent of

the respondents. This characteristic received a rate of response of 82.7 percent in the three highest ratings.

Understanding the relationship of office activities to overall performance of the organization was judged mandatory by 6.9 percent of the respondents, very important by 41.4 percent of the respondents, and moderately important by 44.8 percent of the respondents. The characteristic received a rate of response of 93.1 percent in the three highest ratings.

The final characteristic listed under the topical area Planning Skills was the capability to develop proficiency in the recognition of the importance of office trends in determining projects to be planned. The characteristic was judged very important by 34.5 percent of the respondents and moderately important by 41.4 percent of the respondents for a rate of response of 75.9 percent in the three highest ratings.

The data indicate that all the personal and work characteristics presented under Planning Skills were important in the judgment of the respondents for entry-level employees in systems oriented business offices. A summary of the percent of response in the mandatory, very important, and moderately important ratings to all characteristics listed under the topical area Planning Skills is reported in Table 6.

Data Collection Skills

Fifteen characteristics were included on the survey instrument to gather information from the systems supervisors concerning their judgment of the importance of data collection skills for entry-level office employees. Of the characteristics listed in this topical area, 80.0 percent received a mean rating of less than 3.000 and were considered

TABLE 6

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER PLANNING SKILLS

Reference Code	Characteristics	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess the capability to develop proficiency in:				
39	Establishing short-term results-oriented goals	0.0	55.2	41.4	96.6
40	The application of facts and environmental factors in planning projects	10.3	37.9	41.4	89.6
41	Understanding the purposes of systems project planning	10.3	55.2	31.0	96.6
42	Following systems procedures step-by-step	24.1	69.0	3.4	96.6
43	Compiling directions for subsystem studies	3.4	44.8	37.9	86.1
44	Studying specifically defined systems procedures and diagramming the sequential steps necessary to implement the systems procedures	3.4	44.8	27.6	75.8
45	Planning and performing work analysis without direct supervision	10.3	48.3	24.1	82.7
46	Making work priority decisions when planning a project	0.0	58.6	24.1	82.7
47	Understanding the relationship of office activities to overall performance of the organization	6.9	41.4	44.8	93.1
48	Recognition of the importance of office trends in determining projects to be planned	0.0	34.5	41.4	75.9

important to job performance. The characteristics which were judged of greatest importance in this topical area were: (1) the ability to use courtesy and consideration when collecting data for a systems project (2.069); (2) a resourcefulness in searching for all data not just the obvious (2.138); (3) foundations in the identification of facts in contrast to opinion (2.172); and (4) foundations in verifying details and following an audit trail (2.172). The characteristics which were not judged of importance by the respondents for entry-level employees were: (1) foundations in the utilization of informal networks to gather information on office procedures (3.379); (2) the ability to control body language when collecting systems data (3.207); and (3) foundations in the development and use of questionnaires to gather information (3.179). None of the characteristics received a mean rating of less than 2.000 and thus were not considered mandatory to tasks performance. The characteristics with their statistical means listed under Data Collection Skills are presented in Table 7.

Foundations in the identification of facts in contrast to opinions was judged mandatory by 6.9 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 17.2 percent of the respondents. The characteristic received a rate of response of 96.5 percent in the three highest ratings.

Verifying details and following an audit trail was considered mandatory by 13.8 percent of the respondents, very important by 65.5 percent of the respondents, and moderately important by 10.3 percent of the respondents for a rate of response of 89.6 percent in the three highest ratings.

TABLE 7

DATA COLLECTION SKILLS CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess foundations in:	
49	Identification of facts in contrast to opinion	2.172
50	Verifying details and following an audit trail	2.172
51	Gathering information through observation	2.310
52	Recognition of pertinent information within reports, forms, and files and its use in decision processes	2.414
53	Utilization of interview techniques to gather information	2.643
54	Development and use of questionnaires to gather information	3.179
55	Utilization of procedure manuals and formal records of the organization to gather formal information	2.517
56	Utilization of informal networks (the grapevine, etc.) to gather information on office procedures	3.379
57	Analysis of subsystem tasks from data origination to final resolution	2.655
58	Observation of tasks being performed and development of working papers on sequential steps	2.724
59	Resourcefulness in searching for all data not just the obvious	2.138
60	Documentation of collected data	2.207
61	Ability to control body language when collecting systems data	3.207

TABLE 7--Continued

Reference Code	Characteristic	Statistical Mean
62	Ability to talk and listen tactfully with worker at a station where data is being collected to be analyzed	2.276
63	Ability to use courtesy and consideration when collecting data for a systems project	2.069

Five characteristics were placed on the survey instrument to determine the judged importance of methods of gathering information. Gathering information through observation was judged very important by 72.4 percent of the respondents and moderately important by 24.1 percent of the respondents for a rate of response of 96.5 percent in the three highest ratings.

The utilization of interview techniques to gather information was judged mandatory by 10.7 percent of the respondents, very important by 35.7 percent of the respondents, and moderately important by 35.7 percent of the respondents. This characteristic received a rate of response of 82.1 percent in the three highest ratings.

Foundations in the development and use of questionnaires to gather information was rated very important by 17.9 percent of the respondents and moderately important by 53.6 percent of the respondents for a rate of response of 71.5 percent in the three highest ratings.

The utilization of procedure manuals and formal records of the organization to gather formal information was judged mandatory by 3.4 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 48.3 percent of the respondents. The

characteristic received a rate of response of 96.5 percent in the three highest ratings.

The use of informal networks (the grapevine, etc.) to gather information on office procedures was judged very important by 6.9 percent of the respondents and moderately important by 48.3 percent of the respondents for a rate of response of 55.2 percent in the three highest ratings.

The recognition of pertinent information within reports, forms, and files and its use in decision processes was judged mandatory by 3.4 percent of the respondents, very important by 55.2 percent of the respondents and moderately important by 37.9 percent of the respondents. This characteristic received a rate of response of 96.5 percent in the three highest ratings.

Foundations in the analysis of subsystem tasks from data origination to final resolution was judged mandatory by 3.4 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 37.9 percent of the respondents for a rate of response of 86.1 percent in the three highest ratings.

Foundations in the observation of tasks being performed and the development of working papers on sequential steps was rated very important by 37.9 percent of the respondents and moderately important by 55.2 percent of the respondents. The characteristic received a rate of response of 93.1 percent in the three highest ratings.

Resourcefulness in searching for all data not just the obvious was judged mandatory by 10.3 percent of the supervisors, very important by 65.5 percent of the respondents, and moderately important by 24.2 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The characteristic, the entry-level employee should possess foundations in the documentation of collected data, was rated mandatory by 20.7 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 27.6 percent of the respondents. The characteristic received a rate of response of 93.1 percent in the three highest ratings.

The ability to control body language when collecting systems data was judged very important by 17.2 percent of the respondents and moderately important by 51.7 percent of the respondents for a rate of response of 68.9 percent in the three highest ratings.

The ability to talk and listen tactfully with the worker at a station where data is being collected to be analyzed was judged mandatory by 13.8 percent of the respondents, very important by 48.3 percent of the respondents, and moderately important by 34.5 percent of the respondents. The characteristic received a rate of response of 96.6 percent in the three highest ratings.

The final characteristic listed under Data Collection Skills was the ability to use courtesy and consideration when collecting data for a systems project. The characteristic was judged mandatory by 10.3 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 17.3 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

In the Data Collection Skills topical area, 80.0 percent of the personal and work characteristics received a mean rating of less than 3,000 and were thus considered important to job performance. A summary of the percent of response in the mandatory, very important, and moderately important ratings to all characteristics listed under the topical area Data Collection Skills is reported in Table 8.

TABLE 8

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER DATA COLLECTION SKILLS

Reference Code	Characteristics	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess foundations in:				
49	Identification of facts in contrast to opinion	6.9	72.4	17.2	96.5
50	Verifying details and following an audit trail	13.8	65.5	10.3	89.6
51	Gathering information through observation	0.0	72.4	24.1	96.5
52	Recognition of pertinent information within reports, forms, and files and its use in decision processes	3.4	55.2	37.9	96.5
53	Utilization of interview techniques to gather information	10.7	35.7	35.7	82.1
54	Development and use of questionnaires to gather information	0.0	17.9	53.6	71.5
55	Utilization of procedure manuals and formal records of the organization to gather formal information	3.4	44.8	48.3	96.5
56	Utilization of informal networks (the grapevine, etc.) to gather information on office procedures	0.0	6.9	48.3	55.2
57	Analysis of subsystem tasks from data origination to final resolution	3.4	44.8	37.9	86.1
58	Observation of tasks being performed and development of working papers on sequential steps	0.0	37.9	55.2	93.1
59	Resourcefulness in searching for all data not just the obvious	10.3	65.5	24.2	100.0

TABLE 8--Continued

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
60	Documentation of collected data	20.7	44.8	27.6	93.1
61	Ability to control body language when collecting systems data	0.0	17.2	51.7	68.9
62	Ability to talk and listen tactfully with worker at a station where data is being collected to be analyzed	13.8	48.3	34.5	96.6
63	Ability to use courtesy and consideration when collecting data for a systems project	10.3	72.4	17.3	100.0

Analytical Skills

Twenty-one characteristics were included on the survey instrument to gather information from the system supervisors about their judgment of the importance of analytical skills for entry-level employees. Of the characteristics listed in this topical area, 90.5 percent received a mean rating of less than 3.000 and were therefore considered important to job performance. The characteristics which were judged of greatest importance to entry-level task performance were: (1) the capability to maintain accuracy under pressure (2.069); (2) the capability to meet deadlines and other pressures (2.069); (3) the capability to consider several alternative solutions (2.103). The characteristics which were not judged important by the respondents were: (1) the capability to develop and understand the cost-benefit ratio for alternatives under consideration (3.069) and the

capability to utilize keyboarding as a type of data entry (3.034). None of the characteristics listed under the area of analytical skills received a mean rating of less than 2.000. The characteristics and their statistical means are presented in Table 9.

The entry-level employee should possess training in and the capability to develop and understand the cost-benefit ratio for alternatives under consideration was judged mandatory by 3.4 percent of the respondents, very important by 20.7 percent of the respondents, and moderately important by 48.3 percent of the respondents. The characteristic received a rate of response of 72.4 percent in the three highest ratings.

Training in and the capability to follow and analyze paper flow was rated mandatory by 3.4 percent of the respondents, very important by 55.2 percent of the respondents, and moderately important by 34.5 percent of the respondents for a rate of response of 93.1 percent in the three highest ratings.

Training in and the capability to follow and analyze information flow was judged mandatory by 3.4 percent of the respondents, very important by 58.6 percent of the respondents, and moderately important by 31.0 percent of the respondents. This characteristic received a rate of response of 93.0 percent in the three highest ratings.

Training in and the capability to follow and analyze work flow was rated mandatory by 6.9 percent of the respondents, very important by 55.2 percent of the respondents, and moderately important by 31.0 percent of the respondents for a rate of response of 93.1 percent in the three highest ratings.

TABLE 9
ANALYTICAL SKILLS CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess training in and the capability to:	
64	Develop and understand cost-benefit ratio for alternatives under consideration	3.069
	Follow and analyze:	
65	paper flow	2.448
66	information flow	2.414
67	work flow	2.379
68	Review the precedents and present procedures with a willingness to view new approaches and concepts	2.483
69	Maintain accuracy under pressure	2.069
70	Consider several alternative solutions	2.103
71	Meet deadlines and other pressures	2.069
72	Examine all types of office papers for completeness or conformance to rules, procedures, and/or policies	2.724
73	Keep working papers and support materials organized in all working conditions	2.379
74	Design and/or utilize data coding techniques	2.759
75	Understand the many types of data entry	2.793
76	Utilize keyboarding as a type of data entry	3.034
77	Develop skills to detect, observe, delineate, and/or discuss symptoms of problems in work procedures	2.379
78	Analyze performance at work station and determine effectiveness	2.552

TABLE 9--Continued

Reference Code	Characteristic	Statistical Mean
79	Tally, classify, and analyze data in working papers	2.586
80	Make judgments and decisions on analysis projects	2.793
81	Put to use the procedural instructions as agreed to for the project	2.276
82	Plan for and/or view interrelations of information from work analysis teams	2.607
83	Verify with the project director possible modifications for the systems project	2.500
84	Recognize and follow work procedures other than those expressed and/or anticipated	2.276

The capability to review the precedents and present procedures with a willingness to view new approaches and concepts was judged mandatory by 10.3 percent of the respondents, very important by 48.3 percent of the respondents, and moderately important by 31.0 percent of the respondents for a rate of response of 89.6 percent in the three highest ratings.

The entry-level employee should possess training in and the capability to maintain accuracy under pressure was judged mandatory by 10.3 percent of the respondents, very important by 72.4 percent of the respondents, and moderately important by 17.3 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

The training and capability to consider several alternative solutions was judged mandatory by 17.2 percent of the respondents, very important by 58.6 percent of the respondents, and moderately important

by 20.7 percent of the respondents for a rate of response of 96.5 percent in the three highest ratings.

The capability to meet deadlines and other pressures was judged mandatory by 13.8 percent of the respondents, very important by 65.5 percent of the respondents, and moderately important by 20.7 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

Training in and the capability to examine all types of office papers for completeness or conformance to rules, procedures, and/or policies was rated very important by 44.8 percent of the respondents and moderately important by 41.4 percent of the respondents. This characteristic received a rate of response of 86.2 percent in the three highest ratings.

Keeping working papers and support materials organized in all working conditions was judged mandatory by 6.9 percent of the respondents, very important by 48.3 percent of the respondents, and moderately important by 44.8 percent of the respondents for rate of response of 100 percent in the three highest ratings.

The importance for the entry-level employee to possess training in and the capability to design and/or utilize data coding techniques was judged mandatory by 6.9 percent of the respondents, very important by 34.5 percent of the respondents, and moderately important by 41.4 percent of the respondents. This characteristic recieved a rate of response of 82.8 percent in the three highest ratings.

An understanding of the many types of data entry was judged mandatory by 6.9 percent of the respondents, very important by 27.6 percent

of the respondents, and moderately important by 44.8 percent of the respondents for a rate of response of 79.3 percent in the three highest ratings.

Training in and the capability to utilize keyboarding as a type of data entry was rated mandatory by 6.9 percent of the respondents, very important by 17.2 percent of the respondents, and moderately important by 48.3 percent of the respondents. This characteristic received a rate of response of 72.4 percent in the three highest ratings.

The entry-level employee should possess training in and the capability to develop skills to detect, observe, delineate, and/or discuss symptoms of problems in work procedures was judged mandatory by 10.3 percent of the respondents, very important by 41.4 percent of the respondents, and moderately important by 48.3 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

The capability to analyze performance at work stations and determine effectiveness was rated very important by 44.8 percent of the respondents and moderately important by 55.2 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The training and capability to tally, classify, and analyze data in working papers was judged very important by 44.8 percent of the respondents and moderately important by 51.7 percent of the respondents for a rate of response of 96.5 percent in the three highest ratings.

The capability to make judgments and decisions on analysis projects was rated very important by 48.3 percent of the respondents and moderately important by 34.5 percent of the respondents for a rate of response of 82.8 percent in the three highest ratings.

The entry-level employee should possess the training and the capability to put to use the procedural instructions as agreed to for the project was judged mandatory by 10.3 percent of the respondents, very important by 55.2 percent of the respondents, and moderately important by 31.0 percent of the respondents. This characteristic recieved a rate of response of 96.5 percent in the three highest ratings.

The capability to plan for and/or view interrelations of information from work analysis teams was rated very important by 46.4 percent of the respondents and moderately important by 46.4 percent of the respondents for a rate of response of 92.8 percent in the three highest ratings.

The training and capability to verify with the project director possible modifications for the systems projects was judged mandatory by 10.7 percent of the respondents, very important by 39.3 percent of the respondents, and moderately important by 39.3 percent of the respondents. This characteristic received a rate of response of 89.3 percent in the three highest ratings.

The final characteristic presented under the topical area Analytical Skills was the training and capability to recognize and follow work procedures other than those expressed and/or anticipated. This characteristic was judged mandatory by 17.2 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 31.0 percent of the respondents for a rate of response of 93.0 percent in the three highest ratings.

A summary of the percent of response in the mandatory, very important, and moderately important ratings to the characteristics listed under the topical area Analytical Skills is reported in Table 10.

TABLE 10

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER ANALYTICAL SKILLS

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess training in and the capability to:				
64	Develop and understand cost-benefit ratio for alternatives under consideration	3.4	20.7	48.3	72.4
	Follow and analyze:				
65	paper flow	3.4	55.2	34.5	93.1
66	information flow	3.4	58.6	31.0	93.0
67	work flow	6.9	55.2	31.0	93.1
	Review the precedents and present procedures with a willingness to view new approaches and concepts				
68		10.3	48.3	31.0	89.6
69	Maintain accuracy under pressure	10.3	72.4	17.3	100.0
70	Consider several alternative solutions	17.2	58.6	20.7	96.5
71	Meet deadlines and other pressures	13.8	65.5	20.7	100.0
	Examine all types of office papers for completeness or conformance to rules, procedures, and/or policies				
72		0.0	44.8	41.4	86.2
73	Keep working papers and support materials organized in all working conditions	6.9	48.3	44.8	100.0
74	Design and/or use data coding techniques	6.9	34.5	41.4	82.8
75	Understand the many types of data entry	6.9	27.6	44.8	79.3
76	Use keyboarding as a type of data entry	6.9	17.2	48.3	72.4

TABLE 10--Continued

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
77	Develop skills to detect, observe, delineate, and/or discuss symptoms of problems in work procedures	10.3	41.4	48.3	100.0
78	Analyze performance at work station and determine effectiveness	0.0	44.8	55.2	100.0
79	Tally, classify, and analyze data in working papers	0.0	44.8	51.7	96.5
80	Make judgments and decisions on analysis projects	0.0	48.3	34.5	82.8
81	Put to use the procedural instructions as agreed to for the project	10.3	55.2	31.0	96.5
82	Plan for and/or view interrelations of information from work analysis teams	0.0	46.4	46.4	92.8
83	Verify with the project director possible modifications for the systems project	10.7	39.3	39.3	89.3
84	Recognize and follow work procedures other than those expressed and/or anticipated	17.2	44.8	31.0	93.0

Data Analysis Skills

Nine characteristics were included on the survey instrument to obtain information from the systems supervisors about their judgment of the importance of data analysis skills for entry-level employees. All of the characteristics presented in this topical area received a mean rating of less than 3.000 and were thus considered important to task performance. The characteristics judged by the respondents as of greatest importance

in this topical area were: (1) the capability to develop proficiency in utilizing problem solving logic (2.069) and the capability to understand the role of the computer as a tool for implementing systems work (2.071). The characteristics listed under Data Analysis Skills are presented with their statistical means in Table 11.

The entry-level employee should possess the capability of developing proficiency in selecting and developing desirable alternative work procedures from the data collected was judged mandatory by 3.4 percent of the respondents, very important by 62.1 percent of the respondents, and moderately important by 31.0 percent of the respondents. This characteristic received a rate of response of 96.5 percent in the three highest ratings.

The capability of developing proficiency in utilizing problem solving logic was rated mandatory by 17.3 percent of the respondents, very important by 58.6 percent of the respondents, and moderately important by 24.1 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The capability to develop proficiency in interpreting and summarizing facts collected in the subsystem study was judged mandatory by 3.6 percent of the respondents, very important by 60.7 percent of the respondents, and moderately important by 32.1 percent of the respondents. This characteristic received a rate of response of 96.4 percent in the three highest ratings.

The entry-level employee should possess the capability of developing proficiency in understanding the role of the computer as a tool for implementing systems work was judged mandatory by 21.4 percent of the respondents, very important by 53.6 percent of the respondents,

TABLE 11

DATA ANALYSIS SKILLS CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess the capability of developing proficiency in:	
85	Selecting and developing desirable alternative work procedures from data collected	2.345
86	Utilizing problem solving logic	2.069
87	Interpreting and summarizing facts collected in the subsystem study	2.357
88	Understanding the role of the computer as a tool for implementing systems work	2.071
89	Understanding the necessity of data base design and development in total systems improvement	2.393
90	The use of electronic transmission of data	2.897
91	Searching for ways and means for improving procedures	2.172
92	Interfacing with the computer	2.345
93	Searching for the "truth" in performance procedures rather than simply reporting worker responses	2.429

and moderately important by 21.4 percent of the respondents. This characteristic received a rate of response of 96.4 percent in the three highest ratings.

Understanding the necessity of data base design and development in total systems improvement was rated mandatory by 7.1 percent of the respondents, very important by 53.6 percent of the respondents, and

moderately important by 35.7 percent of the respondents for a rate of response of 96.4 percent in the three highest ratings.

The entry-level employee should possess the capability of developing proficiency in the use of electronic transmission of data was judged mandatory by 3.4 percent of the respondents, very important by 27.6 percent of the respondents, and moderately important by 51.7 percent of the respondents. This characteristic received a rate of response of 82.7 percent in the three highest ratings.

The capability of developing proficiency in searching for ways and means for improving procedures was rated mandatory by 10.3 percent of the respondents, very important by 62.1 percent of the respondents, and moderately important by 27.6 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The characteristic, capability of developing proficiency in interfacing with the computer, was judged mandatory by 13.8 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 34.5 percent of the respondents. The rate of response in the three highest ratings for this characteristic was 93.1 percent.

The final characteristic listed under Data Analysis Skills was the capability of developing proficiency in searching for the "truth" in performance procedures rather than simply reporting worker responses. This characteristic was judged mandatory by 10.7 percent of the respondents, very important by 46.4 percent of the respondents, and moderately important by 32.1 percent of the respondents for a rate of response of 89.2 percent in the three highest ratings.

The data indicate that all the personal and work characteristics presented under Data Analysis Skills were important in the judgment of the respondents for entry-level task performance in systems oriented business offices. A summary of the percent of response in the mandatory, very important, and moderately important ratings to all characteristics listed under the topical area Data Analysis Skills is reported in Table 12.

Cost Analysis of Alternatives

Thirteen characteristics were included on the survey instrument to obtain judgment from the systems supervisors of the importance of characteristics associated with the analysis of costs for various alternative procedures for entry-level employees. Of the characteristics listed in this topical area, 69.2 percent received a mean rating of less than 3.000 and were therefore considered important to job performance. The characteristics which were not considered important for the performance of entry-level tasks by the respondents were: (1) foundations in the costs created by preventive maintenance for equipment (3.107); (2) foundations in the diverse scope of office costs (3.071); (3) foundations in estimating, securing, determining, and/or analyzing office costs (3.036); and (4) foundations in the costs created by non-utilized equipment (3.000). None of the cost analysis of alternatives personal and work characteristics received a mean rating of less than 2.000 and, therefore, were not considered mandatory to entry-level task performance. The characteristics listed under the topical area Cost Analysis of Alternatives and their statistical means are presented in Table 13.

The entry-level employee should possess foundations in the diverse scope of office costs was judged very important by 14.3 percent

TABLE 12

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER DATA ANALYSIS SKILLS

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess the capability of developing proficiency in:				
85	Selecting and developing desirable alternative work procedures from data collected	3.4	62.1	31.0	96.5
86	Utilizing problem solving logic	17.3	58.6	24.1	100.0
87	Interpreting and summarizing facts collected in the subsystem study	3.6	60.7	32.1	96.4
88	Understanding the role of the computer as a tool for implementing systems work	21.4	53.6	21.4	96.4
89	Understanding the necessity of data base design and development in total systems improvement	7.1	53.6	35.7	96.4
90	The use of electronic transmission of data	3.4	27.6	51.7	82.7
91	Searching for ways and means for improving procedures	10.3	62.1	27.6	100.0
92	Interfacing with the computer	13.8	44.8	34.5	93.1
93	Searching for the "truth" in performance procedures rather than simply reporting worker responses	10.7	46.4	32.1	89.2

TABLE 13
COST ANALYSIS OF ALTERNATIVES CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess foundations in:	
94	The diverse scope of office costs	3.071
95	The importance of the person-machine interface in total office performance and costs	2.679
96	The magnitude of office costs including the necessity for materials control	2.724
97	The relationship of office costs to overall performance of the organization	2.929
98	The role of employees' performance in affecting office costs	2.586
99	Forms development and control as an integral function of office costs	2.893
100	Estimating, securing, determining, and/or analyzing office costs	3.036
101	Cost-benefit ratio for machines and materials as utilized and/or proposed	2.786
102	The basic principles of accounting	2.517
	The costs created by:	
103	preventive maintenance for equipment	3.107
104	inoperative equipment	2.964
105	non-utilized equipment	3.000
106	materials conservation	2.821

of the respondents and moderately important by 67.9 percent of the respondents. The response rate in the three highest ratings for this characteristic was 82.2 percent.

An understanding of the importance of the person-machine interface in total office performance and costs was judged very important by 35.7 percent of the respondents and moderately important by 60.7 percent of the respondents for a rate of response of 96.4 percent in the three highest ratings.

The entry-level employee should possess an awareness of the magnitude of office cost including the necessity for materials control was rated very important by 31.0 percent of the respondents and moderately important by 65.5 percent of the respondents. This characteristic received a rate of response of 96.5 percent in the three highest ratings.

Foundations in the relationship of office costs to overall performance of the organization was judged mandatory by 3.6 percent of the respondents, very important by 14.3 percent of the respondents, and moderately important by 67.9 percent of the respondents. This characteristic received a rate of response of 85.8 percent in the three highest ratings.

An understanding of the role of employees' performance in affecting office costs was rated mandatory by 3.4 percent of the respondents, very important by 37.9 percent of the respondents, and moderately important by 55.2 percent of the respondents for a rate of response of 96.5 percent in the three highest ratings.

The entry-level employee should possess knowledge of forms development and control as an integral function of office costs was judged very important by 25.0 percent of the respondents and moderately important by

64.3 percent of the respondents. The rate of response in the three highest ratings was 89.3 percent for this characteristic.

Foundations in estimating, securing, determining, and/or analyzing office costs was rated very important by 17.9 percent of the respondents and moderately important by 67.9 percent of the respondents for a rate of response of 85.8 percent in the three highest ratings.

The entry-level employee should possess an understanding of the cost-benefit ratio for machines and materials as utilized and/or proposed was judged very important by 32.1 percent of the respondents and moderately important by 60.7 percent of the respondents. This characteristic received a rate of response of 92.8 percent in the three highest ratings.

Foundations in the basic principles of accounting was judged mandatory by 10.3 percent of the respondents, very important by 34.5 percent of the respondents, and moderately important by 48.3 percent of the respondents for a rate of response of 93.1 percent in the three highest ratings.

The entry-level employee should possess an understanding of costs created by preventive maintenance for equipment, was judged very important by 28.6 percent of the respondents and moderately important by 42.9 percent of the respondents for a rate of response of 71.5 percent in the three highest ratings.

Awareness of the costs created by inoperative equipment was judged very important by 28.6 percent of the respondents and moderately important by 53.6 percent of the respondents. This characteristic received a rate of response of 82.2 percent in the three highest ratings.

The entry-level employee should possess foundations in the costs created by non-utilized equipment was rated very important by 25.0 percent

of the respondents and moderately important by 53.6 percent of the respondents. The rate of response in the three highest ratings for this characteristic was 78.6 percent.

The final characteristic listed under Cost Analysis of Alternatives was foundations in the costs created by materials conservation. This characteristic was judged very important by 32.1 percent of the respondents and moderately important by 53.6 percent of the respondents for a rate of response of 85.7 percent in the three highest ratings.

A summary of the percent of response in the mandatory, very important, and moderately important ratings to all characteristics listed under the topical area Cost Analysis of Alternatives is presented in Table 14.

Presentation of Data

Seven characteristics were included on the survey instrument to gather information from the systems supervisors about their judgment of the importance of skills associated with the presentation of data for entry-level employees. Of the characteristics in this topical area, 28.6 percent recieved a mean rating of less than 2.000 and were thus considered mandatory to the performance of entry-level tasks. These characteristics were the ability to listen effectively in office situations (1.897) and the ability to communicate clearly in writing (1.897). These two characteristics comprised 15.4 percent of the characteristics from all topical areas receiving a mandatory rating.

All of the characteristics presented under Presentation of Data received a mean rating of less than 3.000 and were considered important to task performance. The characteristics with their statistical means are presented in Table 15.

TABLE 14

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER COST ANALYSIS OF ALTERNATIVES

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess foundations in:				
94	The diverse scope of office costs	0.0	14.3	67.9	82.2
	The importance of the person-machine interface in total office performance and costs				
95		0.0	35.7	60.7	96.4
	The magnitude of office costs including the necessity for materials control				
96		0.0	31.0	65.5	96.5
	The relationship of office costs to overall performance of the organization				
97		3.6	14.3	67.9	85.8
	The role of employees' performance in affecting office costs				
98		3.4	37.9	55.2	96.5
	Forms development and control as an integral function of office costs				
99		0.0	25.0	64.3	89.3
	Estimating, securing, determining, and/or analyzing office costs				
100		0.0	17.9	67.9	85.8
	Cost-benefit ratio for machines and materials as utilized and/or proposed				
101		0.0	32.1	60.7	92.8
102	The basic principles of accounting	10.3	34.5	48.3	93.1
	The costs created by:				
103	preventive maintenance for equipment	0.0	28.6	42.9	71.5
104	inoperative equipment	0.0	28.6	53.6	82.2
105	non-utilized equipment	0.0	25.0	53.6	78.6
106	materials conservation	0.0	32.1	53.6	85.7

TABLE 15

PRESENTATION OF DATA CHARACTERISTICS
AND STATISTICAL MEANS

Reference Code	Characteristic	Statistical Mean
	The entry-level employee should possess the:	
107	Ability to listen effectively in office situations	1.897
108	Ability to communicate orally to groups	2.379
109	Ability to communicate orally with co-workers, supervisors, and workers performing at the work stations	2.069
110	Ability to explain procedures requiring special or technical skills and knowledges in a manner understandable to the recipient	2.310
111	Ability to communicate clearly in writing	1.897
112	Ability to compile reports from data collected	2.310
113	Ability to create and prepare oral presentations and visual displays	2.621

The ability to listen effectively in office situations was judged mandatory by 20.7 percent of the respondents, very important by 69.0 percent of the respondents, and moderately important by 10.3 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

The ability to communicate orally to groups was rated mandatory by 10.3 percent of the respondents, very important by 44.8 percent of the respondents, and moderately important by 41.4 percent of the respondents for a rate of response of 96.5 percent in the three highest ratings.

The characteristic, the ability to communicate orally with co-workers, supervisors, and workers performing at the work station, was

judged mandatory by 10.3 percent of the respondents, very important by 75.9 percent of the respondents, and moderately important by 10.3 percent of the respondents. The rate of response in the three highest ratings for this characteristic was 96.5 percent.

The ability to explain procedures requiring special or technical skills and knowledges in a manner understandable to the recipient was judged mandatory by 6.9 percent of the respondents, very important by 65.5 percent of the respondents, and moderately important by 20.7 percent of the respondents for a rate of response of 93.1 percent in the three highest ratings.

The ability to communicate clearly in writing was judged mandatory by 24.1 percent of the respondents, very important by 62.1 percent of the respondents, and moderately important by 13.8 percent of the respondents. This characteristic received a rate of response of 100 percent in the three highest ratings.

The ability to compile reports from the collected data was rated very important by 69.0 percent of the respondents and moderately important by 31.0 percent of the respondents for a rate of response of 100 percent in the three highest ratings.

The final characteristic listed under Presentation of Data was the ability to create and prepare oral presentations and visual displays. This characteristic was judged mandatory by 3.4 percent of the respondents, very important by 48.3 percent of the respondents, and moderately important by 34.5 percent of the respondents for a rate of response of 86.2 percent in the three highest ratings.

A summary of the percent of response in the mandatory, very important, and moderately important ratings to each characteristic listed under the topical area Presentation of Data is presented in Table 16.

TABLE 16

SUMMARY OF PERCENT OF RESPONSE TO CHARACTERISTICS
LISTED UNDER PRESENTATION OF DATA

Reference Code	Characteristic	Response %			
		Mandatory	Very Important	Moderately Important	Total
	The entry-level employee should possess the:				
107	Ability to listen effectively in office situations	20.7	69.0	10.3	100.0
108	Ability to communicate orally to groups	10.3	44.8	41.4	96.5
109	Ability to communicate orally with co-workers, supervisors, and workers performing at the work stations	10.3	75.9	10.3	96.5
110	Ability to explain procedures requiring special or technical skills and knowledges in a manner understandable to the recipient	6.9	65.5	20.7	93.1
111	Ability to communicate clearly in writing	24.1	62.1	13.8	100.0
112	Ability to compile reports from data collected	0.0	69.0	31.0	100.0
113	Ability to create and prepare oral presentations and visual displays	3.4	48.3	34.5	86.2

Summary

The analysis of the data collected to determine personal and work characteristics judged necessary for success as an entry-level employee in businesses which utilize systems planning and controlling in their approaches to organization and management has been presented in this chapter. The results of analysis of other types of information obtained

from the respondents were also presented. This included information concerning the employing firm (e.g. industrial classification and size of the firm) and information concerning the respondent (e.g. age and educational background).

The personal and work characteristics and the supervisors judgments of the importance of each for success in performing entry-level tasks were reported in eight topical areas. Analysis of each characteristic was reported by use of a statistical mean and percent of responses in the three highest ratings: Mandatory, very important, or moderately important.

Conclusions were drawn from the results of this study. The conclusions are presented in the next chapter. Chapter V also includes a summary of the study and recommendations for curriculum development in office education and for further research in business education.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The purpose of this chapter is to present the summary, conclusions, and recommendations that resulted from this study. The summary reviews the purpose of the study, the procedures used in the study, and the findings as indicated by the analysis of the data. The conclusions present inferences drawn from the study. Recommendations are made for educational programs which prepare students for office occupations and for further research in business education related to this study. The intent of this study was not to develop specific proposals for curriculum but to provide guidelines for office education curriculum development.

Summary

Purpose

Personal and work characteristics necessary for success as an entry-level employee in businesses which utilize systems planning and controlling in their approaches to organization and management were investigated in this study. The purpose of this study was to synthesize the judgments of persons employed in selected business organizations to determine the importance of personal and work characteristics to entry-level task performance. The study also attempted to draw implications from the findings for future curriculum development in office education programs.

Procedures

The procedures followed in this study consisted of six steps. These steps were: (1) A comprehensive review of related research and literature in the areas of systems management and the necessary characteristics for the performance of office work, (2) the design of a survey instrument which could be used to obtain and evaluate the data collected from this instrument, (3) the sampling of an appropriate population and distributing the survey instrument, (4) the collecting, tabulating, and analyzing the data for the research, (5) the determining of implications suggested by the analysis of the data, and (6) the writing of the dissertation.

The population for this study was limited to business organizations located in the Oklahoma City Standard Metropolitan Statistical Area. The population was drawn from firms represented by membership in either the Association for Systems Management or the Data Processing Management Association. The collection of data covered the period of September, 1979, through December, 1979. Respondents for the study were systems supervisors employed in business organizations within the described population.

The survey instrument designed to collect data was divided into eight topical areas. These areas were: Total Systems Concepts, Interpersonal Relationships, Planning Skills, Data Collection Skills, Analytical Skills, Data Analysis Skills, Cost Analysis of Alternatives, and Presentation of Data. The design of the survey instrument required a response of Mandatory, Very Important, Moderately Important, Unimportant, or Not Applicable to each of the one hundred six personal and work characteristics distributed within the eight topical areas.

To analyze the cumulative judgments of the respondents, statistical means and percents of response were used. These statistical techniques allowed for the determination of the important personal and work characteristics. Utilizing frequency counts and an assigned numerical value for each response, a mean was computed for each characteristic. Contingency tables were used to determine the percent of response in each of the five possible ratings for each characteristic.

Findings

Of the 106 personal and work characteristics surveyed in this study, 91.5 percent emerged as mandatory or very important for task performance at the level of proficiency necessary for job entry and mobility within a systems oriented business office. Eight major findings resulted from analyses of the data presented in Chapter IV:

1. Characteristics germane to understanding the basic features and concepts of systems are important for the prospective office employee. The characteristics include foundations in systems vocabulary and a tolerance for the study and analysis of routine work. Characteristics judged as important for entry-level employees are willingness (a) to accept the challenge presented by new equipment and procedures, (b) to view alternative methods for office procedures, (c) to participate in experimental office procedures, (d) to assist others in adjusting to procedure changes, and (e) to objectively evaluate the necessity of feedback for systems improvement. In addition, characteristics associated with the desire to maintain an awareness of office advancements through current periodicals and literature and the desire to participate in retraining to update systems skills are judged as important. The awareness

of the interdependencies of office operations and the awareness of subsystem functions within the total systems are also judged important characteristics of entry-level office employees.

2. Characteristics that are necessary to effectively interact with systems personnel and other members of the organization are important for prospective office employees. The characteristics include a willingness to exert extra effort and the ability to place job performance above personal reactions.

Judged as important are characteristics related to human relations skills with co-workers. These characteristics include a sensitivity towards the needs and tolerance levels of co-workers, the ability to cooperate with co-workers, the ability to interact with co-workers, and the ability to ease tensions in sensitive office situations.

Characteristics related to human relation skills with supervisors are important. These characteristics are a respect for authority and the ability to effectively use supervision.

Other important characteristics are a best effort attitude, a cheerful and harmonizing attitude, and loyalty. Awareness of one's own tolerance level as well as the ability to exercise judgment and discretion in interpersonal relationships are important. The capabilities to develop proficiency in delegating duties, directing others, and effective teaching are important characteristics for entry-level office employees.

3. Characteristics which enable entry-level employees to develop proficiency in planning systems projects and supporting systems projects are important. The characteristics include the capabilities to develop proficiency in following systems procedures, understanding the purposes of systems project planning, and establishing short-term, results-oriented

goals. The capabilities to make work priority decisions, apply facts and environmental factors when planning projects, and recognize office trends in determining projects to be planned are also important characteristics of entry-level office employees. Other important characteristics are the capabilities of understanding the purposes of systems project planning and understanding the relationship of office activities to the overall performance of the organization. The capability to diagram the steps necessary to implement the systems procedures is an important characteristic of entry-level office employees.

4. Characteristics related to the methods of collecting data are important for the prospective office employee. The characteristics include an understanding of the use of various sources to collect data. These sources of data are procedure manuals, formal organizational records, interviews, and observation of tasks. In addition, the capabilities to identify and verify facts, follow an audit trail, and document data are important characteristics for entry-level office employees. Other characteristics of importance are the capability to recognize pertinent information and resourcefulness in searching for all data, not just the obvious. Characteristics used when collecting data are also important. These characteristics include the ability to control body language, the ability to talk and listen tactfully, and the ability to use courtesy and consideration.

5. Characteristics germane to analytical skills are important for prospective office employees. The characteristics include the capabilities to maintain accuracy under pressure, to consider alternative solutions, and to meet deadlines and other pressures. In addition, the capabilities to follow and analyze paper flow, information flow, and work

flow are important characteristics for prospective office employees. Other important characteristics of entry-level office employees are capabilities in designing and/or utilizing data coding techniques, reviewing present and past procedures with a willingness to view new approaches, and examining papers for completeness or conformance to rules, procedures, or policies. The capabilities to make judgments and decisions on analysis projects and to tally, classify, and analyze data in working papers are also important characteristics for entry-level employees. Characteristics related to the analysis of performance at a work station to detect symptoms of problems in work procedures are important. Other characteristics important for entry-level task performance are the capabilities to keep working papers organized, to follow instructions, and to verify with the project director modifications in the project. In addition, the capability to view the interrelation of information from work analysis teams and the capability to recognize and follow work procedures other than those expressed or anticipated are important characteristics of entry-level office employees.

6. Characteristics related to the analysis of the collected data are important for prospective office employees. The characteristics include the capability to search for ways to improve procedures and the capability to develop and select desirable work procedures. Other characteristics important for entry-level employees are understanding the role of the computer as a tool of systems work, the capability to interface with the computer, and understanding the necessity of data base design and development in systems improvement. The capabilities to use problem solving logic and to interpret and summarize facts are important characteristics for entry-level task performance. Also important to

entry-level task performance are the capabilities to develop proficiency in the use of electronic transmission of data and to search for the truth in performance procedures rather than simply reporting worker responses.

7. Characteristics which are pertinent to analyzing office costs are important for prospective office employees. The characteristics include understanding the magnitude of office costs, the role of employee's performance in affecting office costs, and the relationship of office costs to the overall performance of the organization. Other characteristics important for entry-level employees are an understanding of the basic principles of accounting and the cost-benefit ratio. Understanding the importance of the person-machine interface in total office performance and cost is an important characteristic of prospective office employees. In addition, an understanding of forms development and control as an integral function of office costs and an understanding of the costs created by inoperative equipment and materials waste are important characteristics of entry-level office employees.

8. Characteristics which are inherent to the skills necessary to effectively compile and present collected data are important for prospective office employees. Important characteristics include the ability to communicate orally to individuals and groups, the ability to listen effectively, and the ability to communicate clearly in writing. Other important characteristics include the ability to compile reports and the ability to create visual displays from the collected data. The ability to explain procedures requiring special or technical skills and knowledges in a manner understandable to the recipient is an important characteristic for prospective office employees.

Conclusions

The findings of this study have led to the following conclusions for the Oklahoma City Standard Metropolitan Statistical Area:

1. The training received in educational settings is an important aspect of the background of prospective office employees for businesses which utilize systems planning and controlling in their approaches to organization and management. All of the respondents indicated that at least a high school education was necessary for successful task performance.

2. Respondents were aware of the curricular needs of entry-level office employees and the respondents demonstrated a willingness to cooperate with educators by judging the importance of personal and work characteristics for the performance of entry-level tasks in systems oriented business organizations.

3. Respondents judged characteristics as important that related to current curricular offerings such as accounting principles, analytical skills, and oral and written communication skills. However, additional characteristics that related to systems were also judged important by the respondents.

4. The findings of this study imply that to perform at the level of proficiency necessary for job entry and mobility in a systems oriented business office, employees should possess the personal and work characteristics identified by analyses of the data. Groupings of related personal and work characteristics within the topical areas were established; the reference code number of each characteristic, as presented in Tables 1-16, appears in parentheses. The implications of the findings are:

a. Total Systems Concepts. Prospective office employees should be aware of changes in equipment and procedures taking place in today's

office situations (16,17). Future office employees should be willing to accept the challenges presented to office employees by new equipment and procedures (10). New office employees should understand the necessity of feedback for the proper functioning of a system (18). Prospective office employees should understand that every duty, no matter how routine it may appear, is of consequence and that it affects the entire system (15). Good foundations in systems vocabulary (8) and the functions of a system (9,11) should be possessed by prospective office employees. New office employees should have developed a desire to maintain an awareness of office advancements and participate in retraining to update systems skills (12,14). Prospective office employees should be willing to view alternative procedures for office tasks (13).

b. Interpersonal Relationships. Prospective office employees should develop the ability to exercise judgment and discretion in interpersonal relationships within the office environment (32,35). Future office employees should possess the ability to cooperate and interact with co-workers (20,21,25,27). Potential office employees should develop a sensitivity towards the needs of co-workers (22,23,25). New office employees should develop a best effort rather than a get by attitude (19), a willingness to exert extra effort and carry an increased work load when necessary (28), and develop the ability to place performance above personal reactions or feelings (26,33,34). Prospective office employees should understand the importance of office material confidentiality (24). Prospective office employees should possess a respect for authority (30), the ability to accept constructive criticism (31), and the ability to effectively use supervision (29). Prospective office employees should

possess the capabilities to delegate duties (36), direct others (37), and effectively teach (38).

These conclusions related to Interpersonal Relationships concur with the findings of other studies. Paddock found that competencies in human relations are important for office personnel.¹ Bryce, in her study which analyzed job activities and personality traits of office workers, found that the traits most needed by office workers included tact, adaptability, and self-control.²

c. Planning Skills. Prospective office employees should have developed proficiency in establishing short-term, results-oriented goals (39). Future office employees should possess the capabilities to make work priority decisions, compile directions, and follow procedures step-by-step (46,43,42). Prospective office employees should have the capability to apply facts and environmental factors in planning projects (40). Entry-level office employees should understand the purposes of systems project planning (41), the relationship of office activities to the overall performance of the organization (47), and the importance of office trends when determining projects (48). Prospective office employees should possess the capability to study specifically defined systems procedures and diagram the sequential steps necessary to implement the systems procedures (44). The capability to plan and perform work analysis without direct supervision should be possessed by prospective office employees (45).

¹Paddock, "The Nature and the Need for the Development of Personnel for High-Level Secretarial Positions," 1967.

²Bryce, "An Analysis of Job Activities and Personality Traits Required in Office Occupations of Secretarial Graduates," 1958.

d. Data Collection Skills. Prospective office employees should understand the use of various means to gather data. The means include observation of tasks (51), interviews (53), procedure manuals, and the formal records of the organization (55). Prospective office employees should have developed skills in the identification (49) and verification of facts (50), in the recognition of pertinent information in printed materials (52), and in the documentation of data (60). Future office employees should possess resourcefulness in searching for all data not just the obvious (59) and the ability to develop working papers on sequential steps that are involved in observed tasks (58). Prospective office employees should have an understanding of the analysis of a task from origination to completion (57). Future office employees should have the ability to control body language (61), the ability to talk and listen tactfully (62), and the ability to use courtesy and consideration (63) when collecting data.

e. Analytical Skills. Prospective office employees should possess the capability to follow and analyze paper flow (65), information flow (66), and work flow (67) in office situations. Skills in maintaining accuracy under pressure (69), keeping working papers organized (73), and meeting deadlines (71) should be developed by prospective office employees. Future office employees need to understand the many types of data entry (75) and develop the capability to design and use data coding techniques (74). Entry-level office employees should understand the methods used to tally, classify, and analyze data in working papers (79). Skills in making judgments and decisions on projects (80), viewing the interrelations of information (82), and analyzing performance at a work station to determine effectiveness (78) should be developed by future office employees.

Prospective office employees should have an understanding of the importance of putting to use the instructions as agreed to for the project (81) and verifying with the project director possible modifications for the project (83,84). Persons preparing for office occupations should develop skills to detect, observe, delineate, and discuss symptoms of problems in work procedures (77). Potential office employees should understand the ways to review precedents and present procedures with a willingness to view alternative procedures (68,70) and methods of examining office papers for completeness and conformance to rules, procedures, and policies of the organization (72).

f. Data Analysis Skills. Prospective office employees should have developed the capability to analyze, to recognize relationships, and to reason logically (86,87,93). Skill in selecting and developing alternative work procedures from collected data (85) should be possessed by the entry-level office employee. Prospective office employees should possess capability to develop proficiency in the use of electronic transmission of data (90) and in techniques for searching for ways to improve office procedures (91). Prospective office employees should understand the role of the computer as a tool for implementing systems work (88) and the necessity of data base design and development in total systems improvement (89). Entry-level office employees should possess the capability to develop proficiency in interfacing with the computer (92).

g. Cost Analysis of Alternatives. Prospective office employees should have developed an understanding of the magnitude of office costs (96), the role of employee's performance in affecting office costs (98), and the relationship of office costs to the overall performance of the organization (97). Entry-level office employees should understand the

importance of the person-machine interface in total office performance (95). An understanding of the importance of forms development and control (99) and the use of the cost-benefit ratio (101) should be possessed by the prospective office employee. The entry-level office employee should possess foundations in the costs created by inoperative equipment (104) and wasted materials (106). Prospective office employees should understand the basic principles of accounting (102). This conclusion related to Cost Analysis of Alternatives concurs with Paddock's finding that competencies in accounting principles are important for office personnel.¹

h. Presentation of Data. Prospective office employees should possess the ability to present data in reports (111,112), tables, charts, and graphs (113). Prospective office employees should develop skills in oral communications to both individuals (109) and groups (108) and should develop skills in effective listening techniques (107). Entry-level office employees should develop the ability to explain procedures in a manner understandable to the recipient (110). These conclusions related to Presentation of Data concur with findings of other studies. Reiff recommended that office personnel should develop written and oral communication skills.² Erickson concluded that an important component of office work is communicating with others in the office situation.³

¹Paddock, "The Nature and The Need for the Development of Personnel for High-Level Secretarial Positions," 1967.

²Reiff, "Entry-Level Job Qualifications and Employee Attitudes in New York City Word Processing Centers and Implications for Secondary School Business Education Curricula in the New York Metropolitan Area," 1974.

³Erickson, Basic Components of Office Work--An Analysis of 300 Office Jobs, 1971.

Recommendations

The conclusions of this study establish the need for recommendations for curriculum development in office education and for further research in business education related to this study.

Curriculum

Educational programs preparing students for office occupations should be evaluated to determine the extent to which the pre-employment needs of office employees are being met.

Educational programs preparing students for office occupations should be evaluated to determine the need for inclusion of topics of instruction which stress the important personal and work characteristics delineated in this study for performance of entry-level tasks in businesses which utilize systems planning and controlling in their approaches to organization and management.

Educators preparing students for office occupations should be attuned to the changing needs of businesses located in the area which is served by the educational program.

Educators preparing students for office occupations should evaluate their role in the continuing education of office employees. Opportunities for office employees to update skills and knowledges in office procedures and equipment considered important in this study should be provided as a part of the curriculum.

Educators who prepare students for office occupations should continue to develop professionally in order to acquire and maintain skills and knowledges that are current with organization, management, procedures, and equipment in modern office situations.

These recommendations made for office education curricula are consistent with the recommendations made in the literature reviewed for this study. Boehm recommends the educational process as the solution to the preparation of future office workers.¹ Gilbert recommended that educational systems recognize the needs of the world of work and prepare students accordingly.² Murdick and Ross recommend education as the only answer for achieving the potential of office technology.³ Houser and Hershey conclude that the extent to which office operations will be improved in the future may well depend upon the active participation by business teachers in assessing and designing office support systems.⁴

Research

This study should be replicated periodically to determine changes in the importance of the personal and work characteristics to entry-level task performance in systems oriented businesses.

A study should be conducted to determine specific changes which are taking place in business offices in the areas of personnel requirements, procedures, and equipment.

This study should be replicated in other geographical locations to determine the importance of the personal and work characteristics to entry-level task performance in systems oriented businesses in those locations.

¹Boehm, "Shaping Decisions with Systems Analysis," p. 93.

²Gilbert, "Counting the Cost of Bad Spelling," p. 24.

³Murdick and Ross, Information Systems for Modern Management, p. 546.

⁴Houser and Hershey, "Training and Development of Office Employees: Implications for Business Educators," p. 21.

Additional studies should be conducted to provide for further input into the development of office systems into office education curricula.

This study should be replicated in public sector offices to determine the importance of the personal and work characteristics to entry-level task performance.

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APPENDICES

APPENDIX A

MATERIALS SENT TO PARTICIPANTS IN STUDY

Letter Inviting Participation

Postal Card

Letter Sent With Survey Instrument

Follow-Up Letter



820 Van Vleet Oval Norman, Oklahoma 73019

College of Education

At the present time, research is being conducted in conjunction with the department of business education at the University of Oklahoma. This research is designed to determine the pre-employment characteristics needed by employees in systems support positions and will be based upon the opinions of supervisors of systems work. Results of the study will be utilized in updating present curricula.

Approximately 100 characteristics have been placed on a questionnaire and participants will be asked to rate these on a five-point scale. Completion of the questionnaire should require no more than 20 to 30 minutes of the participant's time.

Your assistance is needed. Please show your willingness to cooperate in this study by completing and returning the enclosed postal card. If you are not involved in the supervision of systems work, your assistance in having the card completed and returned by a systems supervisor in your firm will be appreciated.

Sincerely yours,

Robert J. Olney
Instructor

RJO:kmh

Enclosure

Date _____

Name of Participant _____

Name of Firm _____

Address _____

☐ () We will participate in the systems survey.

☐ () We will not participate in the systems survey.



College of Education

We are grateful for your willingness to participate in the research project being conducted in conjunction with the department of business education at the University of Oklahoma. As you remember, the study is designed to determine the pre-employment characteristics needed by employees in systems support positions. Results will be utilized in updating present curricula.

Enclosed you will find the questionnaire which will provide the data to be analyzed. Please complete the items as indicated in the instructions and return in the envelope provided. We are hoping that all questionnaires will be returned to us by November 23, 1979.

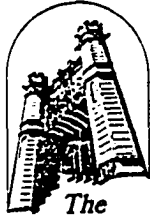
Thank you for your interest and assistance in this project.

Sincerely yours,

Robert J. Olney
Instructor

RJO:kmh

Enclosures



The
University of Oklahoma at Norman

College of Education

Several weeks ago a questionnaire was mailed to you to help determine the pre-employment characteristics needed by employees in systems support positions. Results are to be utilized in updating present curricula.

Response to this project has been excellent. Your opinion as a systems supervisor makes this study more significant and the results more valid.

If you have not already mailed your questionnaire, please help the systems profession by taking time to complete the enclosed questionnaire and mailing it in the postage-paid envelope.

Sincerely yours,

Robert J. Olney
Instructor

RJO:kmh

Enclosures

APPENDIX B
SURVEY INSTRUMENT

CHARACTERISTICS NEEDED BY ENTRY-LEVEL EMPLOYEES
FOR EMPLOYMENT AND ADVANCEMENT THEREIN
IN BUSINESS OFFICES WHICH UTILIZE SYSTEMS CONCEPTS
Research Questionnaire

DEFINITION: Entry-Level Employee - a person assuming initial employment within a firm at a level of work which allows for vertical and/or horizontal mobility. Specific reference is made to those positions which could begin a career ladder to systems analysis work.

CARD
CODE

INDUSTRIAL CLASSIFICATION

1. _____

Financial ()
Manufacturing ()

Number of employees within the firm _____

2. _____

RESPONDENT BACKGROUND INFORMATION

Educational Background (check highest level completed)

3. _____

High School graduate ()	Bachelor's degree--
Attended college but did not graduate ()	non-business major ()
Two-year college graduate ()	Master's degree ()
Bachelor's degree--	Other training ()
business major ()	Please specify _____

Age of Respondent

4. _____

25 - 34 ()

45 - 54 ()

35 - 44 ()

55 and over ()

ENTRY-LEVEL SUPPORT PERSONNEL INFORMATION

Present number of entry-level office personnel _____

5. _____

Projected need for entry-level office personnel by 1985 _____

6. _____

Minimum educational level desired of entry-level office personnel

7. _____

Less than a high school diploma ()	Junior college graduate ()
High school graduate ()	Four-year college graduate ()
Business college graduate ()	

What traditional office skills are a pre-requisite for entry-level employment in a business office which utilizes systems concepts?

Shorthand ()	Calculating machines ()
Typewriting ()	Records control (filing) ()
Bookkeeping ()	Other _____

What are the primary responsibilities of entry-level office employees within your firm? (May attach a printed job description)

DIRECTIONS FOR COMPLETION OF QUESTIONNAIRE

Please consider the personal and work characteristics needed for employment and advancement therein by entry-level employees in business offices which utilize systems concepts and the importance of these characteristics as a part of formal educational development. Place an "X" in the appropriate space to indicate whether you think the characteristic is mandatory, very important, moderately important, unimportant, or not applicable. Please "X" only one response for each characteristic, but please respond to each characteristic.

1. Mandatory - characteristic is considered essential or vital to adequately perform the job.
2. Very Important - characteristic is not considered essential to job performance but is considered to be of significant value.
3. Moderately Important - characteristic is considered to be of average importance to the performance of the job.
4. Unimportant - characteristic is considered to have minor value to job performance.
5. Not Applicable - characteristic is considered to have no value to job performance.

TOTAL SYSTEMS CONCEPTS: To perform at the level of proficiency necessary for job entry and mobility within the firm, the ENTRY-LEVEL employee should possess:

						CARD CODE
Foundations in systems vocabulary	(1)	(2)	(3)	(4)	(5)	8. ____
Awareness of the interdependencies of office operations . . .	(1)	(2)	(3)	(4)	(5)	9. ____
Willingness to accept challenge presented by new equipment and procedures	(1)	(2)	(3)	(4)	(5)	10. ____
Awareness of sub-system functions within the total system . .	(1)	(2)	(3)	(4)	(5)	11. ____
Desire to maintain an awareness of office advancements through current periodicals and literature	(1)	(2)	(3)	(4)	(5)	12. ____
Willingness to view alternatives for office procedures . . .	(1)	(2)	(3)	(4)	(5)	13. ____
Desire to participate in retraining and/or updating systems skills	(1)	(2)	(3)	(4)	(5)	14. ____
Tolerance for study and analysis of routine work	(1)	(2)	(3)	(4)	(5)	15. ____
Willingness to participate in experimental office procedures	(1)	(2)	(3)	(4)	(5)	16. ____
Willingness and ability to assist others in adjusting to change in office procedures	(1)	(2)	(3)	(4)	(5)	17. ____
Willingness to objectively evaluate and understand the necessity of feedback for system improvement	(1)	(2)	(3)	(4)	(5)	18. ____
Other characteristics						

INTERPERSONAL RELATIONSHIPS: The ENTRY-LEVEL employee should possess:

A "best effort" rather than a "get by" attitude	(1)	(2)	(3)	(4)	(5)	19. ____
Cheerfulness and a harmonizing attitude toward co-workers . .	(1)	(2)	(3)	(4)	(5)	20. ____
Awareness of own tolerance level (to avoid stress)	(1)	(2)	(3)	(4)	(5)	21. ____
Sensitivity to co-workers' tolerance levels	(1)	(2)	(3)	(4)	(5)	22. ____
Sensitivity to the needs of co-workers	(1)	(2)	(3)	(4)	(5)	23. ____
Ability to treat office material with confidentiality	(1)	(2)	(3)	(4)	(5)	24. ____
Ability to cooperate with co-workers in a common effort . . .	(1)	(2)	(3)	(4)	(5)	25. ____
Ability to cope with moderate verbal abuse	(1)	(2)	(3)	(4)	(5)	26. ____
Ability to interact with office employees in technical, skilled, and semi-skilled positions	(1)	(2)	(3)	(4)	(5)	27. ____
Willingness to exert effort and carry an increased work load as the situation requires	(1)	(2)	(3)	(4)	(5)	28. ____

Rate (1) Mandatory; (2) Very Important; (3) Moderately Important; (4) Unimportant;
(5) Not Applicable.

Ability to effectively use supervision (asking for assistance when needed but not relying unnecessarily on supervision)	(1)	(2)	(3)	(4)	(5)	29.____
Respect for authority	(1)	(2)	(3)	(4)	(5)	30.____
Ability to accept and use constructive criticism	(1)	(2)	(3)	(4)	(5)	31.____
Ability to exercise judgment and discretion in interpersonal relationships within the work environment	(1)	(2)	(3)	(4)	(5)	32.____
Ability to recognize gossip (and/or jealousies) and understand its detrimental effects within the office	(1)	(2)	(3)	(4)	(5)	33.____
Ability to place performance above personal reactions and/or feelings	(1)	(2)	(3)	(4)	(5)	34.____
Ability to ease tensions in sensitive office situations . .	(1)	(2)	(3)	(4)	(5)	35.____
Capability to develop proficiency in:						
delegating duties	(1)	(2)	(3)	(4)	(5)	36.____
directing others	(1)	(2)	(3)	(4)	(5)	37.____
effective teaching	(1)	(2)	(3)	(4)	(5)	38.____

Other characteristics

PLANNING SKILLS: The ENTRY-LEVEL employee should possess the capability to develop proficiency in:

Establishing short-term results-oriented goals	(1)	(2)	(3)	(4)	(5)	39.____
The application of facts and environmental factors in planning projects	(1)	(2)	(3)	(4)	(5)	40.____
Understanding the purposes of systems project planning . . .	(1)	(2)	(3)	(4)	(5)	41.____
Following systems procedures step-by-step	(1)	(2)	(3)	(4)	(5)	42.____
Compiling directions for sub-system studies	(1)	(2)	(3)	(4)	(5)	43.____
Studying specifically defined systems procedures and diagramming the sequential steps necessary to implement the systems procedures	(1)	(2)	(3)	(4)	(5)	44.____
Planning and performing work analysis without direct supervision	(1)	(2)	(3)	(4)	(5)	45.____
Making work priority decisions when planning a project . . .	(1)	(2)	(3)	(4)	(5)	46.____
Understanding the relationship of office activities to overall performance of the organization	(1)	(2)	(3)	(4)	(5)	47.____
Recognition of the importance of office trends in determining projects to be planned	(1)	(2)	(3)	(4)	(5)	48.____

Other characteristics

DATA COLLECTION SKILLS: The ENTRY-LEVEL employee should possess foundations in:

Identification of facts in contrast to opinion	(1)	(2)	(3)	(4)	(5)	49.____
Verifying details and following an audit trail	(1)	(2)	(3)	(4)	(5)	50.____
Gathering information through observation	(1)	(2)	(3)	(4)	(5)	51.____
Recognition of pertinent information within reports, forms, and files and its use in decision processes	(1)	(2)	(3)	(4)	(5)	52.____
Utilization of interview techniques to gather information .	(1)	(2)	(3)	(4)	(5)	53.____
Development and use of questionnaires to gather information.	(1)	(2)	(3)	(4)	(5)	54.____
Utilization of procedure manuals and formal records of the organization to gather formal information	(1)	(2)	(3)	(4)	(5)	55.____
Utilization of informal networks (the grapevine, etc.) to gather information on office procedures	(1)	(2)	(3)	(4)	(5)	56.____
Analyzation of sub-system tasks from data origination to final resolution	(1)	(2)	(3)	(4)	(5)	57.____

Rate (1) Mandatory; (2) Very Important; (3) Moderately Important; (4) Unimportant;
(5) Not Applicable.

Observation of tasks being performed and development of
working papers on sequential steps (1) (2) (3) (4) (5) 58.____

Resourcefulness in searching for all data not just
the obvious (1) (2) (3) (4) (5) 59.____

Documentation of collected data (1) (2) (3) (4) (5) 60.____

Ability to control body language when collecting systems data (1) (2) (3) (4) (5) 61.____

Ability to talk and listen tactfully with worker at a
station where data is being collected to be analyzed (1) (2) (3) (4) (5) 62.____

Ability to use courtesy and consideration when collecting
data for a systems project (1) (2) (3) (4) (5) 63.____

Other characteristics

ANALYTICAL SKILLS: The ENTRY-LEVEL employee should possess training in and the capability to:

Develop and understand cost-benefit ratio for alternatives
under consideration (1) (2) (3) (4) (5) 64.____

Follow and analyze:

 paper flow (1) (2) (3) (4) (5) 65.____

 information flow (1) (2) (3) (4) (5) 66.____

 work flow (1) (2) (3) (4) (5) 67.____

Review the precedents and present procedures with a willing-
ness to view new approaches and concepts (1) (2) (3) (4) (5) 68.____

Maintain accuracy under pressure (1) (2) (3) (4) (5) 69.____

Consider several alternative solutions (1) (2) (3) (4) (5) 70.____

Meet deadlines and other pressures (1) (2) (3) (4) (5) 71.____

Examine all types of office papers for completeness or
conformance to rules, procedures, and/or policies (1) (2) (3) (4) (5) 72.____

Keep working papers and support materials organized in all
working conditions (1) (2) (3) (4) (5) 73.____

Design and/or utilize data coding techniques (1) (2) (3) (4) (5) 74.____

Understand the many types of data entry (1) (2) (3) (4) (5) 75.____

Utilize keyboarding as a type of data entry (1) (2) (3) (4) (5) 76.____

Develop skills to detect, observe, delineate, and/or discuss
symptoms of problems in work procedures (1) (2) (3) (4) (5) 77.____

Analyze performance at work station and determine effectiveness (1) (2) (3) (4) (5) 78.____

Tally, classify, and analyze data in working papers (1) (2) (3) (4) (5) 79.____

Make judgments and decisions on analysis projects. (1) (2) (3) (4) (5) 80.____

Put to use the procedural instructions as agreed to for
the project (1) (2) (3) (4) (5) 81.____

Plan for and/or view interrelations of information from work
analysis teams (1) (2) (3) (4) (5) 82.____

Verify with the project director possible modifications
for the systems project (1) (2) (3) (4) (5) 83.____

Recognize and follow work procedures other than those
expressed and/or anticipated (1) (2) (3) (4) (5) 84.____

Other characteristics

DATA ANALYSIS SKILLS: The ENTRY-LEVEL employee should possess the capability of developing
proficiency in:

Selecting and developing desirable alternative work
procedures from data collected (1) (2) (3) (4) (5) 85.____

Rate (1) Mandatory; (2) Very Important; (3) Moderately Important; (4) Unimportant;
(5) Not Applicable.

Utilizing problem solving logic	(1)	(2)	(3)	(4)	(5)	86. __
Interpreting and summarizing facts collected in the sub-system study	(1)	(2)	(3)	(4)	(5)	87. __
Understanding the role of the computer as a tool for implementing systems work	(1)	(2)	(3)	(4)	(5)	88. __
Understanding the necessity of data base design and development in total systems improvement	(1)	(2)	(3)	(4)	(5)	89. __
The use of electronic transmission of data	(1)	(2)	(3)	(4)	(5)	90. __
Searching for ways and means for improving procedures . .	(1)	(2)	(3)	(4)	(5)	91. __
Interfacing with the computer	(1)	(2)	(3)	(4)	(5)	92. __
Searching for the "truth" in performance procedures rather than simply reporting worker responses	(1)	(2)	(3)	(4)	(5)	93. __
Other characteristics						

COST ANALYSIS OF ALTERNATIVES: The ENTRY-LEVEL employee should possess foundations in:

The diverse scope of office costs	(1)	(2)	(3)	(4)	(5)	94. __
The importance of the person-machine interface in total office performance and costs	(1)	(2)	(3)	(4)	(5)	95. __
The magnitude of office costs including the necessity for materials control	(1)	(2)	(3)	(4)	(5)	96. __
The relationship of office costs to overall performance of the organization	(1)	(2)	(3)	(4)	(5)	97. __
The role of employees' performance in affecting office costs	(1)	(2)	(3)	(4)	(5)	98. __
Forms development and control as an integral function of office costs	(1)	(2)	(3)	(4)	(5)	99. __
Estimating, securing, determining, and/or analyzing office costs	(1)	(2)	(3)	(4)	(5)	100. __
Cost-benefit ratio for machines and materials as utilized and/or proposed	(1)	(2)	(3)	(4)	(5)	101. __
The basic principles of accounting	(1)	(2)	(3)	(4)	(5)	102. __
The costs created by:						
preventive maintenance for equipment	(1)	(2)	(3)	(4)	(5)	103. __
inoperative equipment	(1)	(2)	(3)	(4)	(5)	104. __
non-utilized equipment	(1)	(2)	(3)	(4)	(5)	105. __
materials conservation	(1)	(2)	(3)	(4)	(5)	106. __
Other characteristics						

PRESENTATION OF DATA: The ENTRY-LEVEL employee should possess the:

Ability to listen effectively in office situations . . .	(1)	(2)	(3)	(4)	(5)	107. __
Ability to communicate orally to groups	(1)	(2)	(3)	(4)	(5)	108. __
Ability to communicate orally with co-workers, supervisors, and workers performing at the work station	(1)	(2)	(3)	(4)	(5)	109. __
Ability to explain procedures requiring special or technical skills and knowledges in a manner understandable to the recipient	(1)	(2)	(3)	(4)	(5)	110. __
Ability to communicate clearly in writing	(1)	(2)	(3)	(4)	(5)	111. __
Ability to compile reports from data collected	(1)	(2)	(3)	(4)	(5)	112. __
Ability to create and prepare oral presentations and visual displays	(1)	(2)	(3)	(4)	(5)	113. __
Other characteristics						

Please use the back side of this sheet for additional comments and suggestions to business educators.

APPENDIX C
PERCENT OF RESPONSES TO CHARACTERISTICS
BY INDUSTRIAL CLASSIFICATION

TABLE 17

ANALYSIS OF RESPONSES CONCERNING
FOUNDATIONS IN SYSTEMS VOCABULARY

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	3 20.0	4 26.7	4 26.7	4 26.7	0 0.0	15 51.7
Manufacturing	2 14.3	4 28.6	4 28.6	4 28.6	0 0.0	14 48.3

Column	5	8	8	8	0	29
Total	17.2	27.6	27.6	27.6	0.0	100.0

Chi Square = 0.16571 with 3 Degrees of Freedom Significance = 0.9829

TABLE 18

ANALYSIS OF RESPONSES CONCERNING AN
AWARENESS OF THE INTERDEPENDENCIES OF OFFICE OPERATIONS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	1 6.7	10 66.7	3 20.3	0 0.0	15 51.7
Manufacturing	1 7.1	5 35.7	6 42.9	2 14.3	0 0.0	14 48.3

Column	2	6	16	5	0	29
Total	6.9	20.7	55.2	17.2	0.0	100.0

Chi Square = 3.83674 with 3 Degrees of Freedom Significance = 0.2796

TABLE 19

ANALYSIS OF RESPONSES CONCERNING A WILLINGNESS TO ACCEPT
CHALLENGE PRESENTED BY NEW EQUIPMENT AND PROCEDURES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	7 46.7	8 53.3	0 0.0	0 0.0	0 0.0	15 51.7
Manufacturing	4 28.6	10 71.4	0 0.0	0 0.0	0 0.0	14 48.3

Column	11	18	0	0	0	29
Total	37.9	62.1	0.0	0.0	0.0	100.0

Chi Square = 0.38517 with 1 Degree of Freedom Significance = 0.5349

TABLE 20

ANALYSIS OF RESPONSES CONCERNING AN AWARENESS
OF SUBSYSTEM FUNCTIONS WITHIN THE TOTAL SYSTEM

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	6 40.0	5 33.3	4 26.7	0 0.0	15 51.7
Manufacturing	0 0.0	7 50.0	4 28.6	2 14.3	1 7.1	14 48.3

Column	0	13	9	6	1	29
Total	0.0	44.8	31.0	20.7	3.4	100.0

Chi Square = 1.82238 with 3 Degrees of Freedom Significance = 0.6101

TABLE 21

ANALYSIS OF RESPONSES CONCERNING A DESIRE TO MAINTAIN AN AWARENESS OF
OFFICE ADVANCEMENTS THROUGH CURRENT PERIODICALS AND LITERATURE

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	7 46.7	5 33.3	2 13.3	0 0.0	15 51.7
Manufacturing	2 14.3	4 28.6	4 28.6	4 28.6	0 0.0	14 48.3

Column	3	11	9	6	0	29
Total	10.3	37.9	31.0	20.7	0.0	100.0

Chi Square = 1.89706 with 3 Degrees of Freedom Significance = 0.5940

TABLE 22

ANALYSIS OF RESPONSES CONCERNING A WILLINGNESS
TO VIEW ALTERNATIVES FOR OFFICE PROCEDURES

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	11 73.3	2 13.3	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	8 57.1	5 35.7	0 0.0	0 0.0	14 48.3

Column	3	19	7	0	0	29
Total	10.3	65.5	24.1	0.0	0.0	100.0

Chi Square = 2.06070 with 2 Degrees of Freedom Significance = 0.3569

TABLE 23

ANALYSIS OF RESPONSES CONCERNING A DESIRE TO PARTICIPATE
IN RETRAINING AND/OR UPDATING SYSTEMS SKILLS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	5 33.3	6 40.0	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	5 35.7	6 42.9	3 21.4	0 0.0	0 0.0	14 48.3

Column	10	12	7	0	0	29
Total	34.5	41.4	24.1	0.0	0.0	100.0

Chi Square = 0.10850 with 2 Degrees of Freedom Significance = 0.9472

TABLE 24

ANALYSIS OF RESPONSES CONCERNING A
TOLERANCE FOR STUDY AND ANALYSIS OF ROUTINE WORK

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	4 26.7	9 60.0	1 6.7	1 6.7	0 0.0	15 51.7
Manufacturing	1 7.1	12 85.7	1 7.1	0 0.0	0 0.0	14 48.3

Column	5	21	2	1	0	29
Total	17.2	72.4	6.9	3.4	0.0	100.0

Chi Square = 3.19789 with 3 Degrees of Freedom Significance = 0.3621

TABLE 25

ANALYSIS OF RESPONSES CONCERNING A WILLINGNESS TO
PARTICIPATE IN EXPERIMENTAL OFFICE PROCEDURES

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	8 53.3	5 33.3	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	8 57.1	5 35.7	1 7.1	0 0.0	14 48.3

Column	2	16	10	1	0	29
Total	6.9	55.2	34.5	3.4	0.0	100.0

Chi Square = 2.96905 with 3 Degrees of Freedom Significance = 0.3964

TABLE 26

ANALYSIS OF RESPONSES CONCERNING A WILLINGNESS AND ABILITY TO
ASSIST OTHERS IN ADJUSTING TO CHANGE IN OFFICE PROCEDURES

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	4 26.7	7 46.7	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	7 50.0	7 50.0	0 0.0	0 0.0	14 48.3

Column	4	14	11	0	0	29
Total	13.8	48.3	37.9	0.0	0.0	100.0

Chi Square = 4.78939 with 2 Degrees of Freedom Significance = 0.0912

TABLE 27

ANALYSIS OF RESPONSES CONCERNING A WILLINGNESS TO OBJECTIVELY EVALUATE AND UNDERSTAND THE NECESSITY OF FEEDBACK FOR SYSTEM IMPROVEMENT

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	5 33.3	7 46.7	2 13.3	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	11 78.6	2 14.3	0 0.0	1 7.1	14 48.3

Column	5	18	4	1	1	29
Total	17.2	62.1	13.8	3.4	3.4	100.0

Chi Square = 7.86375 with 4 Degrees of Freedom Significance = 0.0967

TABLE 28

ANALYSIS OF RESPONSES CONCERNING A BEST EFFORT RATHER THAN A GET BY ATTITUDE

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	8 53.3	7 46.7	0 0.0	0 0.0	0 0.0	15 51.7
Manufacturing	8 57.1	5 35.7	1 7.1	0 0.0	0 0.0	14 48.3

Column	16	12	1	0	0	29
Total	55.2	41.4	3.4	0.0	0.0	100.0

Chi Square = 1.30040 with 2 Degrees of Freedom Significance = 0.5219

TABLE 29

ANALYSIS OF RESPONSES CONCERNING
CHEERFULNESS AND A HARMONIZING ATTITUDE TOWARD COWORKERS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	4 26.7	10 66.7	1 6.7	0 0.0	0 0.0	15 51.7
Manufacturing	3 21.4	11 78.6	0 0.0	0 0.0	0 0.0	14 48.3

Column	7	21	1	0	0	29
Total	24.1	72.4	3.4	0.0	0.0	100.0

Chi Square = 1.15737 with 2 Degrees of Freedom Significance = 0.5606

TABLE 30

ANALYSIS OF RESPONSES CONCERNING AN
AWARENESS OF OWN TOLERANCE LEVEL

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	13 86.7	1 6.7	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	9 64.3	4 28.6	0 0.0	0 0.0	14 48.3

Column	2	22	5	0	0	29
Total	6.9	75.9	17.2	0.0	0.0	100.0

Chi Square = 2.49576 with 2 Degrees of Freedom Significance = 0.2871

TABLE 31

ANALYSIS OF RESPONSES CONCERNING A
SENSITIVITY TO COWORKERS' TOLERANCE LEVELS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	11 73.3	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	10 71.4	3 21.4	0 0.0	0 0.0	14 48.3

Column	2	21	6	0	0	29
Total	6.9	72.4	20.7	0.0	0.0	100.0

Chi Square = 0.01315 with 2 Degrees of Freedom Significance = 0.9934

TABLE 32

ANALYSIS OF RESPONSES CONCERNING A
SENSITIVITY TO THE NEEDS OF COWORKERS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	9 60.0	6 40.0	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	12 85.7	2 14.3	0 0.0	0 0.0	14 48.3

Column	0	21	8	0	0	29
Total	0.0	72.4	27.6	0.0	0.0	100.0

Chi Square = 2.39694 with 1 Degree of Freedom Significance = 0.1216

TABLE 33

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO
TREAT OFFICE MATERIAL WITH CONFIDENTIALITY

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	8 53.3	4 26.7	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	6 42.9	7 50.0	1 7.1	0 0.0	0 0.0	14 48.3

Column	14	11	4	0	0	29
Total	48.3	37.9	13.8	0.0	0.0	100.0

Chi Square = 2.07187 with 2 Degrees of Freedom Significance = 0.3549

TABLE 34

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO
COOPERATE WITH COWORKERS IN A COMMON EFFORT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	7 46.7	8 53.3	0 0.0	0 0.0	0 0.0	15 51.7
Manufacturing	8 57.1	6 42.9	0 0.0	0 0.0	0 0.0	14 48.3

Column	15	14	0	0	0	29
Total	51.7	48.3	0.0	0.0	0.0	100.0

Chi Square = 0.31828 with 1 Degree of Freedom Significance = 0.5726

TABLE 35

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO
COPE WITH MODERATE VERBAL ABUSE

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	7 46.7	3 20.0	2 13.3	1 6.7	15 51.7
Manufacturing	.2 14.3	3 21.4	6 42.9	1 7.1	2 14.3	14 48.3

Column	4	10	9	3	3	29
Total	13.8	34.5	31.0	10.3	10.3	100.0

Chi Square = 3.23603 with 4 Degrees of Freedom Significance = 0.5191

TABLE 36

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO INTERACT WITH OFFICE
EMPLOYEES IN TECHNICAL, SKILLED, AND SEMI-SKILLED POSITIONS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	10 66.7	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	14 100.0	0 0.0	0 0.0	0 0.0	14 48.3

Column	1	24	4	0	0	29
Total	3.4	82.8	13.8	0.0	0.0	100.0

Chi Square = 5.63889 with 2 Degrees of Freedom Significance = 0.0596

TABLE 37

ANALYSIS OF RESPONSES CONCERNING A WILLINGNESS TO EXERT
EFFORT AND CARRY AN INCREASED WORK LOAD AS THE SITUATION REQUIRES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	4 26.7	9 60.0	2 13.3	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	12 85.7	1 7.1	0 0.0	0 0.0	14 48.3

Column	5	21	3	0	0	29
Total	17.2	72.4	10.3	0.0	0.0	100.0

Chi Square = 2.53043 with 2 Degrees of Freedom Significance = 0.2822

TABLE 38

ANALYSIS OF RESPONSES CONCERNING AN
ABILITY TO EFFECTIVELY USE SUPERVISION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	4 26.7	7 46.7	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	13 92.9	0 0.0	0 0.0	0 0.0	14 48.3

Column	5	20	4	0	0	29
Total	17.2	69.0	13.8	0.0	0.0	100.0

Chi Square = 7.57452 with 2 Degrees of Freedom Significance = 0.0227

TABLE 39

ANALYSIS OF RESPONSES CONCERNING A
RESPECT FOR AUTHORITY

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	3 20.0	9 60.0	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	6 42.9	4 28.6	4 28.6	0 0.0	0 0.0	14 48.3

Column	9	13	7	0	0	29
Total	31.0	44.8	24.1	0.0	0.0	100.0

Chi Square = 3.03506 with 2 Degrees of Freedom Significance = 0.2193

TABLE 40

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO
ACCEPT AND USE CONSTRUCTIVE CRITICISM

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 13.3	9 60.0	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	4 28.6	7 50.0	3 21.4	0 0.0	0 0.0	14 48.3

Column	6	16	7	0	0	29
Total	20.7	55.2	24.1	0.0	0.0	100.0

Chi Square = 1.02626 with 2 Degrees of Freedom Significance = 0.5986

TABLE 41

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO EXERCISE JUDGMENT AND DISCRETION IN INTERPERSONAL RELATIONSHIPS WITHIN THE WORK ENVIRONMENT

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	11 73.3	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	11 78.6	2 14.3	0 0.0	0 0.0	14 48.3

Column	2	22	5	0	0	29
Total	6.9	75.9	17.2	0.0	0.0	100.0

Chi Square = 0.16571 with 2 Degrees of Freedom Significance = 0.9205

TABLE 42

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO RECOGNIZE GOSSIP AND UNDERSTAND ITS DETRIMENTAL EFFECTS WITHIN THE OFFICE

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	9 60.0	5 33.3	1 6.7	0 0.0	15 51.7
Manufacturing	2 14.3	7 50.0	4 28.6	1 7.1	0 0.0	14 48.3

Column	2	16	9	2	0	29
Total	6.9	55.2	31.0	6.9	0.0	100.0

Chi Square = 2.32939 with 3 Degrees of Freedom Significance = 0.5069

TABLE 43

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO PLACE
PERFORMANCE ABOVE PERSONAL REACTIONS AND/OR FEELINGS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	4 26.7	7 46.7	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	6 42.9	6 42.9	2 14.3	0 0.0	14 48.3

Column	4	13	10	2	0	29
Total	13.8	44.8	34.5	6.9	0.0	100.0

Chi Square = 6.45010 with 3 Degrees of Freedom Significance = 0.0917

TABLE 44

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO EASE
TENSIONS IN SENSITIVE OFFICE SITUATIONS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	10 66.7	4 26.7	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	6 42.9	8 57.1	0 0.0	0 0.0	14 48.3

Column	0	16	12	1	0	29
Total	0.0	55.2	41.4	3.4	0.0	100.0

Chi Square = 3.30277 with 2 Degrees of Freedom Significance = 0.1918

TABLE 45

ANALYSIS OF RESPONSES CONCERNING A CAPABILITY TO
DEVELOP PROFICIENCY IN DELEGATING DUTIES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	5 33.3	7 46.7	3 20.0	0 0.0	15 51.7
Manufacturing	0 0.0	12 85.7	2 14.3	0 0.0	0 0.0	14 48.3

Column	0	17	9	3	0	29
Total	0.0	58.6	31.0	10.3	0.0	100.0

Chi Square = 8.63591 with 2 Degrees of Freedom Significance = 0.0133

TABLE 46

ANALYSIS OF RESPONSES CONCERNING A CAPABILITY TO
DEVELOP PROFICIENCY IN DIRECTING OTHERS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	5 33.3	7 46.7	3 20.0	0 0.0	15 51.7
Manufacturing	0 0.0	12 85.7	2 14.3	0 0.0	0 0.0	14 48.3

Column	0	17	9	3	0	29
Total	0.0	58.6	31.0	10.3	0.0	100.0

Chi Square = 8.63591 with 2 Degrees of Freedom Significance = 0.0133

TABLE 47

ANALYSIS OF RESPONSES CONCERNING A CAPABILITY TO
DEVELOP PROFICIENCY IN EFFECTIVE TEACHING

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	6 40.0	6 40.0	3 20.0	0 0.0	15 51.7
Manufacturing	0 0.0	11 78.6	3 21.4	0 0.0	0 0.0	14 48.3

Column	0	17	9	3	0	29
Total	0.0	58.6	31.0	10.3	0.0	100.0

Chi Square = 5.44258 with 2 Degrees of Freedom Significance = 0.0658

TABLE 48

ANALYSIS OF RESPONSES CONCERNING
ESTABLISHING SHORT-TERM RESULTS-ORIENTED GOALS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	6 40.0	8 53.3	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	10 71.4	4 28.6	0 0.0	0 0.0	14 48.3

Column	0	16	12	1	0	29
Total	0.0	55.2	41.4	3.4	0.0	100.0

Chi Square = 3.30278 with 2 Degrees of Freedom Significance = 0.1918

TABLE 49

ANALYSIS OF RESPONSES CONCERNING THE APPLICATION OF FACTS
AND ENVIRONMENTAL FACTORS IN PLANNING PROJECTS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	5 33.3	7 46.7	2 13.3	0 0.0	15 51.7
Manufacturing	2 14.3	6 42.9	5 35.7	1 7.1	0 0.0	14 48.3

Column	3	11	12	3	0	29
Total	10.3	37.9	41.4	10.3	0.0	100.0

Chi Square = 1.05768 with 3 Degrees of Freedom Significance = 0.7873

TABLE 50

ANALYSIS OF RESPONSES CONCERNING AN UNDERSTANDING
OF THE PURPOSES OF SYSTEMS PROJECT PLANNING

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	10 66.7	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	2 14.3	6 42.9	5 35.7	1 7.1	0 0.0	14 48.3

Column	3	16	9	1	0	29
Total	10.3	55.2	31.0	3.4	0.0	100.0

Chi Square = 2.41283 with 3 Degrees of Freedom Significance = 0.4913

TABLE 51

ANALYSIS OF RESPONSES CONCERNING
FOLLOWING SYSTEMS PROCEDURES STEP-BY-STEP

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	4 26.7	10 66.7	1 6.7	0 0.0	0 0.0	15 51.7
Manufacturing	3 21.4	10 71.4	0 0.0	1 7.1	0 0.0	14 48.3

Column	7	20	1	1	0	29
Total	24.1	69.0	3.4	3.4	0.0	100.0

Chi Square = 2.11088 with 3 Degrees of Freedom Significance = 0.5497

TABLE 52

ANALYSIS OF RESPONSES CONCERNING
COMPILING DIRECTIONS FOR SUBSYSTEM STUDIES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	7 46.7	5 33.3	1 6.7	1 6.7	15 51.7
Manufacturing	0 0.0	6 42.9	6 42.9	1 7.1	1 7.1	14 48.3

Column	1	13	11	2	2	29
Total	3.4	44.8	37.9	6.9	6.9	100.0

Chi Square = 1.13470 with 4 Degrees of Freedom Significance = 0.8887

TABLE 53

ANALYSIS OF RESPONSES CONCERNING STUDYING SPECIFICALLY DEFINED SYSTEMS
PROCEDURES AND DIAGRAMMING THE SEQUENTIAL STEPS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	7 46.7	4 26.7	2 13.3	1 6.7	15 51.7
Manufacturing	0 0.0	6 42.9	4 28.6	4 28.6	0 0.0	14 48.3

Column	1	13	8	6	1	29
Total	3.4	44.8	27.6	20.7	3.4	100.0

Chi Square = 2.71233 with 4 Degrees of Freedom Significance = 0.6071

TABLE 54

ANALYSIS OF RESPONSES CONCERNING PLANNING AND
PERFORMING WORK ANALYSIS WITHOUT DIRECT SUPERVISION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	3 20.0	4 26.7	5 33.3	2 13.3	1 6.7	15 51.7
Manufacturing	0 0.0	10 71.4	2 14.3	2 14.3	0 0.0	14 48.3

Column	3	14	7	4	1	29
Total	10.3	48.3	24.1	13.8	3.4	100.0

Chi Square = 7.83197 with 4 Degrees of Freedom Significance = 0.0979

TABLE 55

ANALYSIS OF RESPONSES CONCERNING MAKING WORK
PRIORITY DECISIONS WHEN PLANNING A PROJECT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	6 40.0	6 40.0	1 6.7	2 13.3	15 51.7
Manufacturing	0 0.0	11 78.6	1 7.1	1 7.1	1 7.1	14 48.3

Column	0	17	7	2	3	29
Total	0.0	58.6	24.1	6.9	10.3	100.0

Chi Square = 5.34722 with 3 Degrees of Freedom Significance = 0.1481

TABLE 56

ANALYSIS OF RESPONSES CONCERNING UNDERSTANDING THE RELATIONSHIP
OF OFFICE ACTIVITIES TO OVERALL PERFORMANCE OF THE ORGANIZATION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	5 33.3	9 60.0	0 0.0	1 6.7	15 51.7
Manufacturing	2 14.3	7 50.0	4 28.6	1 7.1	0 0.0	14 48.3

Column	2	12	13	1	1	29
Total	6.9	41.4	44.8	3.4	3.4	100.0

Chi Square = 6.22933 with 4 Degrees of Freedom Significance = 0.1827

TABLE 57

ANALYSIS OF RESPONSES CONCERNING RECOGNITION OF THE IMPORTANCE OF
OFFICE TRENDS IN DETERMINING PROJECTS TO BE PLANNED

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	4 26.7	6 40.0	4 26.7	1 6.7	15 51.7
Manufacturing	0 0.0	6 42.9	6 42.9	2 14.3	0 0.0	14 48.3

Column	0	10	12	6	1	29
Total	0.0	34.5	41.4	20.7	3.4	100.0

Chi Square = 2.03460 with 3 Degrees of Freedom Significance = 0.5653

TABLE 58

ANALYSIS OF RESPONSES CONCERNING
IDENTIFICATION OF FACTS IN CONTRAST TO OPINION

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	11 73.3	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	10 71.4	2 14.3	1 7.1	0 0.0	14 48.3

Column	2	21	5	1	0	29
Total	6.9	72.4	17.2	3.4	0.0	100.0

Chi Square = 1.21458 with 3 Degrees of Freedom Significance = 0.7495

TABLE 59

ANALYSIS OF RESPONSES CONCERNING
VERIFYING DETAILS AND FOLLOWING AN AUDIT TRAIL

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	3 20.0	9 60.0	1 6.7	2 13.3	0 0.0	15 51.7
Manufacturing	1 7.1	10 71.4	2 14.3	1 7.1	0 0.0	14 48.3

Column	4	19	3	3	0	29
Total	13.8	65.5	10.3	10.3	0.0	100.0

Chi Square = 1.68682 with 3 Degrees of Freedom Significance = 0.6399

TABLE 60

ANALYSIS OF RESPONSES CONCERNING
GATHERING INFORMATION THROUGH OBSERVATION

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	12 80.0	2 13.3	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	9 64.3	5 35.7	0 0.0	0 0.0	14 48.3

Column	0	21	7	1	0	29
Total	0.0	72.4	24.1	3.4	0.0	100.0

Chi Square = 2.68299 with 2 Degrees of Freedom Significance = 0.2615

TABLE 61

ANALYSIS OF RESPONSES CONCERNING RECOGNITION OF PERTINENT INFORMATION
WITHIN REPORTS, FORMS, AND FILES AND ITS USE IN DECISION PROCESSES

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	7 46.7	7 46.7	1 6.7	0 0.0	15 51.7
Manufacturing	1 7.1	9 64.3	4 28.6	0 0.0	0 0.0	14 48.3

Column	1	16	11	1	0	29
Total	3.4	55.2	37.9	3.4	0.0	100.0

Chi Square = 3.03731 with 3 Degrees of Freedom Significance = 0.3859

TABLE 62

ANALYSIS OF RESPONSES CONCERNING
UTILIZATION OF INTERVIEW TECHNIQUES TO GATHER INFORMATION

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 7.1	5 35.7	5 35.7	2 14.3	1 7.1	14 50.0
Manufacturing	2 14.3	5 35.7	5 35.7	2 14.3	0 0.0	14 50.0

Column	3	10	10	4	1	28
Total	10.7	35.7	35.7	14.3	3.6	100.0

Chi Square = 1.33333 with 4 Degrees of Freedom Significance = 0.8557

TABLE 63

ANALYSIS OF RESPONSES CONCERNING
DEVELOPMENT AND USE OF QUESTIONNAIRES TO GATHER INFORMATION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	2 14.3	8 57.1	3 21.4	1 7.1	14 50.0
Manufacturing	0 0.0	3 21.4	7 50.0	3 21.4	1 7.1	14 50.0

Column	0	5	15	6	2	28
Total	0.0	17.9	53.6	21.4	7.1	100.0

Chi Square = 0.26667 with 3 Degrees of Freedom Significance = 0.9662

TABLE 64

ANALYSIS OF RESPONSES CONCERNING UTILIZATION OF PROCEDURE MANUALS
AND FORMAL RECORDS OF THE ORGANIZATION TO GATHER FORMAL INFORMATION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	6 40.0	7 46.7	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	7 50.0	7 50.0	0 0.0	0 0.0	14 48.3

Column	1	13	14	1	0	29
Total	3.4	44.8	48.3	3.4	0.0	100.0

Chi Square = 2.04487 with 3 Degrees of Freedom Significance = 0.5631

TABLE 65

ANALYSIS OF RESPONSES CONCERNING UTILIZATION OF INFORMAL
NETWORKS TO GATHER INFORMATION ON OFFICE PROCEDURES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	1 6.7	8 53.3	6 40.0	0 0.0	15 51.7
Manufacturing	0 0.0	1 7.1	6 42.9	7 50.0	0 0.0	14 48.3

Column	0	2	14	13	0	29
Total	0.0	6.9	48.3	44.8	0.0	100.0

Chi Square = 0.32855 with 2 Degrees of Freedom Significance = 0.8485

TABLE 66

ANALYSIS OF RESPONSES CONCERNING ANALYSIS OF SUBSYSTEM
TASKS FROM DATA ORIGINATION TO FINAL RESOLUTION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	8 53.3	5 33.3	1 6.7	1 6.7	15 51.7
Manufacturing	1 7.1	5 35.7	6 42.9	2 14.3	0 0.0	14 48.3

Column	1	13	11	3	1	29
Total	3.4	44.8	37.9	10.3	3.4	100.0

Chi Square = 3.08573 with 4 Degrees of Freedom Significance = 0.5436

TABLE 67

ANALYSIS OF RESPONSES CONCERNING OBSERVATION OF TASKS
BEING PERFORMED AND DEVELOPMENT OF WORKING PAPERS ON SEQUENTIAL STEPS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	6 40.0	7 46.7	1 6.7	1 6.7	15 51.7
Manufacturing	0 0.0	5 35.7	9 64.3	0 0.0	0 0.0	14 48.3

Column	0	11	16	1	1	29
Total	0.0	37.9	55.2	3.4	3.4	100.0

Chi Square = 2.30917 with 3 Degrees of Freedom Significance = 0.5108

TABLE 68

ANALYSIS OF RESPONSES CONCERNING RESOURCEFULNESS IN
SEARCHING FOR ALL DATA NOT JUST THE OBVIOUS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	10 66.7	4 26.7	0 0.0	0 0.0	15 51.7
Manufacturing	2 14.3	9 64.3	3 21.4	0 0	0 0	14 48.3

Column	3	19	7	0	0	29
Total	10.3	65.5	24.1	0.0	0.0	100.0

Chi Square = 0.49493 with 2 Degrees of Freedom Significance = 0.7808

TABLE 69

ANALYSIS OF RESPONSES CONCERNING
DOCUMENTATION OF COLLECTED DATA

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	3 20.0	8 53.3	3 20.0	1 6.7	0 0.0	15 51.7
Manufacturing	3 21.4	5 35.7	5 35.7	1 7.1	0 0.0	14 48.3

Column	6	13	8	2	0	29
Total	20.7	44.8	27.6	6.9	0.0	100.0

Chi Square = 1.15920 with 3 Degrees of Freedom Significance = 0.7628

TABLE 70

ANALYSIS OF RESPONSES CONCERNING ABILITY TO
CONTROL BODY LANGUAGE WHEN COLLECTING SYSTEMS DATA

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	4 26.7	7 46.7	3 20.0	1 6.7	15 51.7
Manufacturing	0 0.0	1 7.1	8 57.1	4 28.6	1 7.1	14 48.3

Column	0	5	15	7	2	29
Total	0.0	17.2	51.7	24.1	6.9	100.0

Chi Square = 1.97739 with 3 Degrees of Freedom Significance = 0.5771

TABLE 71

ANALYSIS OF RESPONSES CONCERNING ABILITY TO TALK AND LISTEN TACTFULLY
WITH WORKER AT A STATION WHERE DATA IS BEING COLLECTED TO BE ANALYZED

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 13.3	11 73.3	1 6.7	1 6.7	0 0.0	15 51.7
Manufacturing	2 14.3	3 21.4	9 64.3	0 0.0	0 0.0	14 48.3

Column	4	14	10	1	0	29
Total	13.8	48.3	34.5	3.4	0.0	100.0

Chi Square = 11.95115 with 3 Degrees of Freedom Significance = 0.0076

TABLE 72

ANALYSIS OF RESPONSES CONCERNING ABILITY TO USE COURTESY AND
CONSIDERATION WHEN COLLECTING DATA FOR A SYSTEMS PROJECT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 13.3	11 73.3	2 13.3	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	10 71.4	3 21.4	0 0.0	0 0.0	14 48.3

Column	3	21	5	0	0	29
Total	10.3	72.4	17.2	0.0	0.0	100.0

Chi Square = 0.54712 with 2 Degrees of Freedom Significance = 0.7607

TABLE 73

ANALYSIS OF RESPONSES CONCERNING AN UNDERSTANDING OF THE
COST-BENEFIT RATIO FOR ALTERNATIVES UNDER CONSIDERATION

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	2 13.3	8 53.3	3 20.0	2 13.3	15 51.7
Manufacturing	1 7.1	4 28.6	6 42.9	3 21.4	0 0.0	14 48.3

Column	1	6	14	6	2	29
Total	3.4	20.7	48.3	20.7	6.9	100.0

Chi Square = 3.92256 with 4 Degrees of Freedom Significance = 0.4166

TABLE 74

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
FOLLOW AND ANALYZE PAPER FLOW

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	6 40.0	7 46.7	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	10 71.4	3 21.4	1 7.1	0 0.0	14 48.3

Column	1	16	10	2	0	29
Total	3.4	55.2	34.5	6.9	0.0	100.0

Chi Square = 3.56976 with 3 Degrees of Freedom Significance = 0.3118

TABLE 75

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
FOLLOW AND ANALYZE INFORMATION FLOW

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	7 46.7	6 40.0	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	10 71.4	3 21.4	1 7.1	0 0.0	14 48.3

Column	1	17	9	2	0	29
Total	3.4	58.6	31.0	6.9	0.0	100.0

Chi Square = 2.49790 with 3 Degrees of Freedom Significance = 0.4757

TABLE 76

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
FOLLOW AND ANALYZE WORK FLOW

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	6 40.0	6 40.0	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	10 71.4	3 21.4	1 7.1	0 0.0	14 48.3

Column	2	16	9	2	0	29
Total	6.9	55.2	31.0	6.9	0.0	100.0

Chi Square = 3.97024 with 3 Degrees of Freedom Significance = 0.2647

TABLE 77

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO REVIEW PROCEDURES WITH A
WILLINGNESS TO VIEW NEW APPROACHES AND CONCEPTS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	7 46.7	5 33.3	1 6.7	2 13.3	15 51.7
Manufacturing	3 21.4	7 50.0	4 28.6	0 0.0	0 0.0	14 48.3

Column	3	14	9	1	2	29
Total	10.3	48.3	31.0	3.4	6.9	100.0

Chi Square = 6.08386 with 4 Degrees of Freedom Significance = 0.1930

TABLE 78

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
MAINTAIN ACCURACY UNDER PRESSURE

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	11 73.3	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	2 14.3	10 71.4	2 14.3	0 0.0	0 0.0	14 48.3

Column	3	21	5	0	0	29
Total	10.3	72.4	17.2	0.0	0.0	100.0

Chi Square = 0.54712 with 2 Degrees of Freedom Significance = 0.7607

TABLE 79

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
CONSIDER SEVERAL ALTERNATIVE SOLUTIONS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	10 66.7	2 13.3	1 6.7	0 0.0	15 51.7
Manufacturing	3 21.4	7 50.0	4 28.6	0 0.0	0 0.0	14 48.3

Column	5	17	6	1	0	29
Total	17.2	58.6	20.7	3.4	0.0	100.0

Chi Square = 2.36441 with 3 Degrees of Freedom Significance = 0.5003

TABLE 80

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
MEET DEADLINES AND OTHER PRESSURES

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	10 66.7	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	2 14.3	9 64.3	3 21.4	0 0.0	0 0.0	14 48.3

Column	4	19	6	0	0	29
Total	13.8	65.5	20.7	0.0	0.0	100.0

Chi Square = 0.01817 with 2 Degrees of Freedom Significance = 0.9910

TABLE 81

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO EXAMINE ALL TYPES
OF OFFICE PAPERS FOR COMPLETENESS OR CONFORMANCE TO RULES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	4 26.7	8 53.3	2 13.3	1 6.7	15 51.7
Manufacturing	0 0.0	9 64.3	4 28.6	1 7.1	0 0.0	14 48.3

Column	0	13	12	3	1	29
Total	0.0	44.8	41.4	10.3	3.4	100.0

Chi Square = 4.56068 with 3 Degrees of Freedom Significance = 0.2069

TABLE 82

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
KEEP WORKING PAPERS AND SUPPORT MATERIALS ORGANIZED

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	8 53.3	6 40.0	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	6 42.9	7 50.0	0 0.0	0 0.0	14 48.3

Column	2	14	13	0	0	29
Total	6.9	48.3	44.8	0.0	0.0	100.0

Chi Square = 0.32855 with 2 Degrees of Freedom Significance = 0.8485

TABLE 83

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
DESIGN OR UTILIZE DATA CODING TECHNIQUES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	5 33.3	6 40.0	2 13.3	1 6.7	15 51.7
Manufacturing	1 7.1	5 35.7	6 42.9	1 7.1	1 7.1	14 48.3

Column	2	10	12	3	2	29
Total	6.9	34.5	41.4	10.3	6.9	100.0

Chi Square = 0.29921 with 4 Degrees of Freedom Significance = 0.9899

TABLE 84

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
UNDERSTAND THE MANY TYPES OF DATA ENTRY

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	2 13.3	9 60.0	4 26.7	0 0.0	15 51.7
Manufacturing	2 14.3	6 42.9	4 28.6	2 14.3	0 0.0	14 48.3

Column	2	8	13	6	0	29
Total	6.9	27.6	44.8	20.7	0.0	100.0

Chi Square = 6.56306 with 3 Degrees of Freedom Significance = 0.0872

TABLE 85

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
UTILIZE KEYBOARDING AS A TYPE OF DATA ENTRY

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 13.3	3 20.0	6 40.0	2 13.3	2 13.3	15 51.7
Manufacturing	0 0.0	2 14.3	8 57.1	4 28.6	0 0.0	14 48.3

Column	2	5	14	6	2	29
Total	6.9	17.2	48.3	20.7	6.9	100.0

Chi Square = 5.12399 with 4 Degrees of Freedom Significance = 0.2748

TABLE 86

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO DEVELOP SKILLS
TO DETECT SYMPTOMS OF PROBLEMS IN WORK PROCEDURES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	6 40.0	9 60.0	0 0.0	0 0.0	15 51.7
Manufacturing	3 21.4	6 42.9	5 35.7	0 0.0	0 0.0	14 48.3

Column	3	12	14	0	0	29
Total	10.3	41.4	48.3	0.0	0.0	100.0

Chi Square = 4.11326 with 2 Degrees of Freedom Significance = 0.1279

TABLE 87

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO ANALYZE PERFORMANCE
AT WORK STATION AND DETERMINE EFFECTIVENESS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	5 33.3	10 66.7	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	8 57.1	6 42.9	0 0.0	0 0.0	14 48.3

Column	0	13	16	0	0	29
Total	0.0	44.8	55.2	0.0	0.0	100.0

Chi Square = 1.65980 with 1 Degree of Freedom Significance = 0.1976

TABLE 88

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
TALLY, CLASSIFY, AND ANALYZE DATA IN WORKING PAPERS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	7 46.7	7 46.7	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	6 42.9	8 57.1	0 0.0	0 0.0	14 48.3

Column	0	13	15	1	0	29
Total	0.0	44.8	51.7	3.4	0.0	100.0

Chi Square = 1.11043 with 2 Degrees of Freedom Significance = 0.5739

TABLE 89

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO
MAKE JUDGMENTS AND DECISIONS ON ANALYSIS PROJECTS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	6 40.0	5 33.3	1 6.7	3 20.0	15 51.7
Manufacturing	0 0.0	8 57.1	5 35.7	1 7.1	0 0.0	14 48.3

Column	0	14	10	2	3	29
Total	0.0	48.3	34.5	6.9	10.3	100.0

Chi Square = 3.25510 with 3 Degrees of Freedom Significance = 0.3539

TABLE 90

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO PUT TO USE THE
PROCEDURAL INSTRUCTIONS AS AGREED TO FOR THE PROJECT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 13.3	8 53.3	4 26.7	1 6.7	0 0.0	15 51.7
Manufacturing	1 7.1	8 57.1	5 35.7	0 0.0	0 0.0	14 48.3

Column	3	16	9	1	0	29
Total	10.3	55.2	31.0	3.4	0.0	100.0

Chi Square = 1.41164 with 3 Degrees of Freedom Significance = 0.7028

TABLE 91

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO VIEW
INTERRELATIONS OF INFORMATION FROM WORK ANALYSIS TEAMS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	7 50.0	5 35.7	2 14.3	0 0.0	14 50.0
Manufacturing	0 0.0	6 42.9	8 57.1	0 0.0	0 0.0	14 50.0

Column	0	13	13	2	0	28
Total	0.0	46.4	46.4	7.1	0.0	100.0

Chi Square = 2.76923 with 2 Degrees of Freedom Significance = 0.2504

TABLE 92

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO VERIFY WITH THE
PROJECT DIRECTOR POSSIBLE MODIFICATIONS FOR THE SYSTEMS PROJECT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 14.3	4 28.6	6 42.9	2 14.3	0 0.0	14 50.0
Manufacturing	1 7.1	7 50.0	5 35.7	1 7.1	0 0.0	14 50.0

Column	3	11	11	3	0	28
Total	10.7	39.3	39.3	10.7	0.0	100.0

Chi Square = 1.57576 with 3 Degrees of Freedom Significance = 0.6649

TABLE 93

ANALYSIS OF RESPONSES CONCERNING CAPABILITY TO RECOGNIZE AND FOLLOW
WORK PROCEDURES OTHER THAN THOSE EXPRESSED OR ANTICIPATED

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	8 53.3	5 33.3	1 6.7	0 0.0	15 51.7
Manufacturing	4 28.6	5 35.7	4 28.6	1 7.1	0 0.0	14 48.3

Column	5	13	9	2	0	29
Total	17.2	44.8	31.0	6.9	0.0	100.0

Chi Square = 2.57199 with 3 Degrees of Freedom Significance = 0.4624

TABLE 94

ANALYSIS OF RESPONSES CONCERNING SELECTING AND DEVELOPING
DESIRABLE ALTERNATIVE WORK PROCEDURES FROM DATA COLLECTED

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	7 46.7	6 40.0	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	11 78.6	3 21.4	0 0.0	0 0.0	14 48.3

Column	1	18	9	1	0	29
Total	3.4	62.1	31.0	3.4	0.0	100.0

Chi Square = 3.85899 with 3 Degrees of Freedom Significance = 0.2771

TABLE 95

ANALYSIS OF RESPONSES CONCERNING
UTILIZING PROBLEM SOLVING LOGIC

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	2 13.3	8 53.3	5 33.3	0 0.0	0 0.0	15 51.7
Manufacturing	3 21.4	9 64.3	2 14.3	0 0.0	0 0.0	14 48.3

Column	5	17	7	0	0	29
Total	17.2	58.6	24.1	0.0	0.0	100.0

Chi Square = 1.51185 with 2 Degrees of Freedom Significance = 0.4696

TABLE 96

ANALYSIS OF RESPONSES CONCERNING INTERPRETING AND
SUMMARIZING FACTS COLLECTED IN THE SUBSYSTEM STUDY

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	9 64.3	4 28.6	1 7.1	0 0.0	14 50.0
Manufacturing	1 7.1	8 57.1	5 35.7	0 0.0	0 0.0	14 50.0

Column	1	17	9	1	0	28
Total	3.6	60.7	32.1	3.6	0.0	100.0

Chi Square = 2.16993 with 3 Degrees of Freedom Significance = 0.5379

TABLE 97

ANALYSIS OF RESPONSES CONCERNING UNDERSTANDING THE ROLE
OF THE COMPUTER AS A TOOL FOR IMPLEMENTING SYSTEMS WORK

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	3 21.4	7 50.0	3 21.4	1 7.1	0 0.0	14 50.0
Manufacturing	3 21.4	8 57.1	3 21.4	0 0.0	0 0.0	14 50.0

Column	6	15	6	1	0	28
Total	21.4	53.6	21.4	3.6	0.0	100.0

Chi Square = 1.06667 with 3 Degrees of Freedom Significance = 0.7851

TABLE 98

ANALYSIS OF RESPONSES CONCERNING UNDERSTANDING THE NECESSITY
OF DATA BASE DESIGN AND DEVELOPMENT IN TOTAL SYSTEMS IMPROVEMENT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	2 14.3	8 57.1	3 21.4	1 7.1	0 0.0	14 50.0
Manufacturing	0 0.0	7 50.0	7 50.0	0 0.0	0 0.0	14 50.0

Column	2	15	10	1	0	28
Total	7.1	53.6	35.7	3.6	0.0	100.0

Chi Square = 4.66666 with 3 Degrees of Freedom Significance = 0.1979

TABLE 99

ANALYSIS OF RESPONSES CONCERNING THE USE
OF ELECTRONIC TRANSMISSION OF DATA

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	4 26.7	7 46.7	2 13.3	1 6.7	15 51.7
Manufacturing	0 0.0	4 28.6	8 57.1	1 7.1	1 7.1	14 48.3

Column	1	8	15	3	2	29
Total	3.4	27.6	51.7	10.3	6.9	100.0

Chi Square = 1.36714 with 4 Degrees of Freedom Significance = 0.8499

TABLE 100

ANALYSIS OF RESPONSES CONCERNING SEARCHING FOR
WAYS AND MEANS FOR IMPROVING PROCEDURES

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 6.7	11 73.3	3 20.0	0 0.0	0 0.0	15 51.7
Manufacturing	2 14.3	7 50.0	5 35.7	0 0.0	0 0.0	14 48.3

Column	3	18	8	0	0	29
Total	10.3	62.1	27.6	0.0	0.0	100.0

Chi Square = 1.68975 with 2 Degrees of Freedom Significance = 0.4296

TABLE 101

ANALYSIS OF RESPONSES CONCERNING
INTERFACING WITH THE COMPUTER

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	4 26.7	6 40.0	4 26.7	1 6.7	0 0.0	15 51.7
Manufacturing	0 0.0	7 50.0	6 42.9	1 7.1	0 0.0	14 48.3

Column	4	13	10	2	0	29
Total	13.8	44.8	34.5	6.9	0.0	100.0

Chi Square = 4.44773 with 3 Degrees of Freedom Significance = 0.2170

TABLE 102

ANALYSIS OF RESPONSES CONCERNING SEARCHING FOR THE TRUTH IN
PERFORMANCE PROCEDURES RATHER THAN SIMPLY REPORTING WORKER RESPONSES

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	3 21.4	6 42.9	3 21.4	2 14.3	0 0.0	14 50.0
Manufacturing	0 0.0	7 50.0	6 42.9	1 7.1	0 0.0	14 50.0

Column	3	13	9	3	0	28
Total	10.7	46.4	32.1	10.7	0.0	100.0

Chi Square = 4.41025 with 3 Degrees of Freedom Significance = 0.2204

TABLE 103

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN
THE DIVERSE SCOPE OF OFFICE COSTS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	0 0.0	11 78.6	2 14.3	1 7.1	14 50.0
Manufacturing	0 0.0	4 28.6	8 57.1	2 14.3	0 0.0	14 50.0

Column	0	4	19	4	1	28
Total	0.0	14.3	67.9	14.3	3.6	100.0

Chi Square = 5.47368 with 3 Degrees of Freedom Significance = 0.1402

TABLE 104

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE IMPORTANCE OF THE
PERSON-MACHINE INTERFACE IN TOTAL OFFICE PERFORMANCE AND COSTS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	4 28.6	9 64.3	1 7.1	0 0.0	14 50.0
Manufacturing	0 0.0	6 42.9	8 57.1	0 0.0	0 0.0	14 50.0

Column	0	10	17	1	0	28
Total	0.0	35.7	60.7	3.6	0.0	100.0

Chi Square = 1.45882 with 2 Degrees of Freedom Significance = 0.4822

TABLE 105

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE MAGNITUDE OF
OFFICE COSTS INCLUDING THE NECESSITY FOR MATERIALS CONTROL

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	3 20.0	12 80.0	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	6 42.9	7 50.0	1 7.1	0 0.0	14 48.3

Column	0	9	19	1	0	29
Total	0.0	31.0	65.5	3.4	0.0	100.0

Chi Square = 3.28521 with 2 Degrees of Freedom Significance = 0.1935

TABLE 106

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE RELATIONSHIP OF
OFFICE COSTS TO OVERALL PERFORMANCE OF THE ORGANIZATION

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	1 7.1	1 7.1	11 78.6	1 7.1	0 0.0	14 50.0
Manufacturing	0 0.0	3 21.4	8 57.1	3 21.4	0 0.0	14 50.0

Column	1	4	19	4	0	28
Total	3.6	14.3	67.9	14.3	0.0	100.0

Chi Square = 3.47368 with 3 Degrees of Freedom Significance = 0.3242

TABLE 107

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE ROLE
OF EMPLOYEES' PERFORMANCE IN AFFECTING OFFICE COSTS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	5 33.3	10 66.7	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	6 42.9	6 42.9	1 7.1	0 0.0	14 48.3

Column	1	11	16	1	0	29
Total	3.4	37.9	55.2	3.4	0.0	100.0

Chi Square = 3.06006 with 3 Degrees of Freedom Significance = 0.3825

TABLE 108

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN FORMS DEVELOPMENT
AND CONTROL AS AN INTEGRAL FUNCTION OF OFFICE COSTS

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	2 14.3	9 64.3	2 14.3	1 7.1	14 50.0
Manufacturing	0 0.0	5 35.7	9 64.3	0 0.0	0 0.0	14 50.0

Column	0	7	18	2	1	28
Total	0.0	25.0	64.3	7.1	3.6	100.0

Chi Square = 4.28571 with 3 Degrees of Freedom Significance = 0.2322

TABLE 109

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN ESTIMATING, SECURING,
DETERMINING, OR ANALYZING OFFICE COSTS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	2 14.3	9 64.3	1 7.1	2 14.3	14 50.0
Manufacturing	0 0.0	3 21.4	10 71.4	1 7.1	0 0.0	14 50.0

Column	0	5	19	2	2	28
Total	0.0	17.9	67.9	7.1	7.1	100.0

Chi Square = 2.25263 with 3 Degrees of Freedom Significance = 0.5217

TABLE 110

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN COST-BENEFIT RATIO FOR
MACHINES AND MATERIALS AS UTILIZED OR PROPOSED

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	3 21.4	9 64.3	1 7.1	1 7.1	14 50.0
Manufacturing	0 0.0	6 42.9	8 57.1	0 0.0	0 0.0	14 50.0

Column	0	9	17	1	1	28
Total	0.0	32.1	60.7	3.6	3.6	100.0

Chi Square = 3.05882 with 3 Degrees of Freedom Significance = 0.3826

TABLE 111

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN
THE BASIC PRINCIPLES OF ACCOUNTING

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	8 53.3	4 26.7	2 13.3	0 0.0	15 51.7
Manufacturing	2 14.3	2 14.3	10 71.4	0 0.0	0 0.0	14 48.3

Column	3	10	14	2	0	29
Total	10.3	34.5	48.3	6.9	0.0	100.0

Chi Square = 8.48036 with 3 Degrees of Freedom Significance = 0.0371

TABLE 112

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE COSTS
CREATED BY PREVENTIVE MAINTENANCE FOR EQUIPMENT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	3 21.4	7 50.0	2 14.3	2 14.3	14 50.0
Manufacturing	0 0.0	5 35.7	5 35.7	3 21.4	1 7.1	14 50.0

Column	0	8	12	5	3	28
Total	0.0	28.6	42.9	17.9	10.7	100.0

Chi Square = 1.36666 with 3 Degrees of Freedom Significance = 0.7134

TABLE 113

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE COSTS
CREATED BY INOPERATIVE EQUIPMENT

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	3 21.4	9 64.3	1 7.1	1 7.1	14 50.0
Manufacturing	0 0.0	5 35.7	6 42.9	2 14.3	1 7.1	14 50.0

Column	0	8	15	3	2	28
Total	0.0	28.6	53.6	10.7	7.1	100.0

Chi Square = 1.43333 with 3 Degrees of Freedom Significance = 0.6977

TABLE 114

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE COSTS
CREATED BY NON-UTILIZED EQUIPMENT

Industrial Classification	Responses					
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	Row Total
Financial	0 0.0	2 14.3	10 71.4	1 7.1	1 7.1	14 50.0
Manufacturing	0 0.0	5 35.7	5 35.7	4 28.6	0 0.0	14 50.0

Column	0	7	15	5	1	28
Total	0.0	25.0	53.6	17.9	3.6	100.0

Chi Square = 5.75238 with 3 Degrees of Freedom Significance = 0.1243

TABLE 115

ANALYSIS OF RESPONSES CONCERNING FOUNDATIONS IN THE COSTS
CREATED BY MATERIALS CONSERVATION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	3 21.4	10 71.4	1 7.1	0 0.0	14 50.0
Manufacturing	0 0.0	6 42.9	5 35.7	3 21.4	0 0.0	14 50.0

Column	0	9	15	4	0	28
Total	0.0	32.1	53.6	14.3	0.0	100.0

Chi Square = 3.66667 with 2 Degrees of Freedom Significance = 0.1599

TABLE 116

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO
LISTEN EFFECTIVELY IN OFFICE SITUATIONS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	5 33.3	10 66.7	0 0.0	0 0.0	0 0.0	15 51.7
Manufacturing	1 7.1	10 71.4	3 21.4	0 0.0	0 0.0	14 48.3

Column	6	20	3	0	0	29
Total	20.7	69.0	10.3	0.0	0.0	100.0

Chi Square = 5.63889 with 2 Degrees of Freedom Significance = 0.0596

TABLE 117

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO
COMMUNICATE ORALLY TO GROUPS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	7 46.7	6 40.0	1 6.7	0 0.0	15 51.7
Manufacturing	2 14.3	6 42.9	6 42.9	0 0.0	0 0.0	14 48.3

Column	3	13	12	1	0	29
Total	10.3	44.8	41.4	3.4	0.0	100.0

Chi Square = 1.37741 with 3 Degrees of Freedom Significance = 0.7108

TABLE 118

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO COMMUNICATE ORALLY
WITH COWORKERS, SUPERVISORS, AND WORKERS PERFORMING AT THE WORK STATION

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	11 73.3	2 13.3	1 6.7	0 0.0	15 51.7
Manufacturing	2 14.3	11 78.6	1 7.1	0 0.0	0 0.0	14 48.3

Column	3	22	3	1	0	29
Total	10.3	75.9	10.3	3.4	0.0	100.0

Chi Square = 1.63413 with 3 Degrees of Freedom Significance = 0.6517

TABLE 119

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO EXPLAIN PROCEDURES REQUIRING
TECHNICAL KNOWLEDGE IN A MANNER UNDERSTANDABLE TO THE RECIPIENT

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	12 80.0	0 0.0	1 6.7	1 6.7	15 51.7
Manufacturing	1 7.1	7 50.0	6 42.9	0 0.0	0 0.0	14 48.3

Column	2	19	6	1	1	29
Total	6.9	65.5	20.7	3.4	3.4	100.0

Chi Square = 9.29235 with 4 Degrees of Freedom Significance = 0.0542

TABLE 120

ANALYSIS OF RESPONSES CONCERNING
AN ABILITY TO COMMUNICATE CLEARLY IN WRITING

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	3 20.0	10 66.7	2 13.3	0 0.0	0 0.0	15 51.7
Manufacturing	4 28.6	8 57.1	2 14.3	0 0.0	0 0.0	14 48.3

Column	7	18	4	0	0	29
Total	24.1	62.1	13.8	0.0	0.0	100.0

Chi Square = 0.33099 with 2 Degrees of Freedom Significance = 0.8475

TABLE 121

ANALYSIS OF RESPONSES CONCERNING
AN ABILITY TO COMPILE REPORTS FROM DATA COLLECTED

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	0 0.0	9 60.0	6 40.0	0 0.0	0 0.0	15 51.7
Manufacturing	0 0.0	11 78.6	3 21.4	0 0.0	0 0.0	14 48.3

Column	0	20	9	0	0	29
Total	0.0	69.0	31.0	0.0	0.0	100.0

Chi Square = 1.16690 with 1 Degree of Freedom Significance = 0.2800

TABLE 122

ANALYSIS OF RESPONSES CONCERNING AN ABILITY TO CREATE
AND PREPARE ORAL PRESENTATIONS AND VISUAL DISPLAYS

Industrial Classification	Responses					Row Total
	Mandatory	Very Important	Moderately Important	Unimportant	Not Applicable	
Financial	1 6.7	7 46.7	5 33.3	1 6.7	1 6.7	15 51.7
Manufacturing	0 0.0	7 50.0	5 35.7	2 14.3	0 0.0	14 48.3

Column	1	14	10	3	1	29
Total	3.4	48.3	34.5	10.3	3.4	100.0

Chi Square = 2.30158 with 4 Degrees of Freedom Significance = 0.6805

APPENDIX D
MEAN RESPONSE TO CHARACTERISTICS
BY INDUSTRIAL CLASSIFICATION

TABLE 123

MEAN RESPONSE TO CHARACTERISTICS
BY INDUSTRIAL CLASSIFICATION

CHARACTERISTIC	FINANCIAL	MANUFACTURING	COMPOSITE
To perform at the level of proficiency necessary for job entry and mobility within the firm, the entry-level employee should possess:			
Foundations in systems vocabulary	2.600	2.714	2.655
Awareness of the interdependencies of office operations	3.000	2.643	2.828
Willingness to accept challenge presented by new equipment and procedures	1.533	1.714	1.621
Awareness of subsystem functions within the total system	2.867	2.786	2.828
Desire to maintain an awareness of office advancements through current periodicals and literature	2.533	2.714	2.621
Willingness to view alternatives for office procedures	2.000	2.286	2.138
Desire to participate in retraining and/or updating systems skills	1.933	1.857	1.897
Tolerance for study and analysis of routine work	1.933	2.000	1.966
Willingness to participate in experimental office procedures	2.200	2.500	2.345
Willingness and ability to assist others in adjusting to change in office procedures	2.000	2.500	2.241
Willingness to objectively evaluate and understand the necessity of feedback for system improvement	1.933	2.357	2.138
A best effort rather than a get by attitude	1.467	1.500	1.483
Cheerfulness and a harmonizing attitude toward co-workers	1.800	1.786	1.793
Awareness of own tolerance level (to avoid stress)	2.000	2.214	2.103
Sensitivity to co-workers' tolerance levels	2.133	2.143	2.138
Sensitivity to the needs of co-workers	2.400	2.143	2.276
Ability to treat office material with confidentiality	1.667	1.643	1.655
Ability to cooperate with co-workers in a common effort	1.533	1.429	1.483
Ability to cope with moderate verbal abuse	2.533	2.857	2.690
Ability to interact with office employees in technical, skilled, and semi-skilled positions	2.200	2.000	2.103
Willingness to exert effort and carry an increased work load as the situation requires	1.867	2.000	1.931
Ability to effectively use supervision (asking for assistance when needed but not relying unnecessarily on supervision)	2.000	1.929	1.966
Respect for authority	2.000	1.857	1.931
Ability to accept and use constructive criticism	2.133	1.929	2.034
Ability to exercise judgment and discretion in inter-personal relationships within the work environment	2.133	2.071	2.103
Ability to recognize gossip (and/or jealousies) and understand its detrimental effects within the office	2.467	2.286	2.379
Ability to place performance above personal reactions and/or feelings	2.000	2.714	2.345

TABLE 123--Continued

CHARACTERISTIC	FINANCIAL	MANUFACTURING	COMPOSITE
Ability to ease tensions in sensitive office situations	2.400	2.571	2.483
Capability to develop proficiency in:			
delegating duties	2.867	2.143	2.517
directing others	2.867	2.143	2.517
effective teaching	2.800	2.214	2.517
The entry-level employee should possess the capability to develop proficiency in:			
Establishing short-term results-oriented goals	2.667	2.286	2.483
The application of facts and environmental factors in planning projects	2.667	2.357	2.517
Understanding the purposes of systems project planning	2.200	2.357	2.276
Following systems procedures step-by-step	1.800	1.929	1.862
Compiling directions for subsystem studies	2.600	2.786	2.690
Studying specifically defined systems procedures and diagramming the sequential steps necessary to implement the systems procedures	2.667	2.857	2.759
Planning and performing work analysis without direct supervision	2.600	2.429	2.517
Making work priority decisions when planning a project	2.933	2.429	2.690
Understanding the relationship of office activities to overall performance of the organization	2.800	2.286	2.552
Recognition of the importance of office trends in determining projects to be planned	3.133	2.714	2.931
The entry-level employee should possess foundations in:			
Identification of facts in contrast to opinion	2.133	2.214	2.172
Verifying details and following an audit trail	2.133	2.214	2.172
Gathering information through observation	2.267	2.357	2.310
Recognition of pertinent information within reports, forms, and files and its use in decision processes	2.600	2.214	2.414
Utilization of interview techniques to gather information	2.736	2.500	2.643
Development and use of questionnaires to gather information	3.214	3.143	3.179
Utilization of procedure manuals and formal records of the organization to gather formal information	2.533	2.500	2.517
Utilization of informal networks (the grapevine, etc.) to gather information on office procedures	3.333	3.429	3.379
Analysis of subsystem tasks from data origination to final resolution	2.667	2.643	2.655
Observation of tasks being performed and development of working papers on sequential steps	2.800	2.643	2.724
Resourcefulness in searching for all data not just the obvious	2.200	2.071	2.138
Documentation of collected data	2.133	2.286	2.207
Ability to control body language when collecting systems data	3.067	3.357	3.207
Ability to talk and listen tactfully with worker at a station where data is being collected to be analyzed	2.067	2.500	2.276

TABLE 123--Continued

CHARACTERISTIC	FINANCIAL	MANUFACTURING	COMPOSITE
Ability to use courtesy and consideration when collecting data for a systems project	2.000	2.143	2.069
The entry-level employee should possess training in and the capability to:			
Develop and understand cost-benefit ratio for alternatives under consideration	3.333	2.786	3.069
Follow and analyze:			
paper flow	2.533	2.357	2.448
information flow	2.467	2.357	2.414
work flow	2.400	2.357	2.379
Review the precedents and present procedures with a willingness to view new approaches and concepts	2.867	2.071	2.483
Maintain accuracy under pressure	2.133	2.000	2.069
Consider several alternative solutions	2.133	2.071	2.103
Meet deadlines and other pressures	2.067	2.071	2.069
Examine all types of office papers for completeness or conformance to rules, procedures, and/or policies	3.000	2.429	2.724
Keep working papers and support materials organized in all working conditions	2.333	2.429	2.379
Design and/or utilize data coding techniques	2.800	2.714	2.759
Understand the many types of data entry	3.133	2.429	2.793
Utilize keyboarding as a type of data entry	2.933	3.143	3.034
Develop skills to detect, observe, delineate, and/or discuss symptoms of problems in work procedures	2.600	2.143	2.379
Analyze performance at work station and determine effectiveness	2.667	2.429	2.552
Tally, classify, and analyze data in working papers	2.600	2.571	2.586
Make judgments and decisions on analysis projects	3.067	2.500	2.793
Put to use the procedural instructions as agreed to for the project	2.267	2.286	2.276
Plan for and/or view interrelations of information from work analysis teams	2.643	2.571	2.607
Verify with the project director possible modifications for the systems project	2.571	2.429	2.500
Recognize and follow work procedures other than those expressed and/or anticipated	2.400	2.143	2.276
The entry-level employee should possess the capability of developing proficiency in:			
Selecting and developing desirable alternative work procedures from data collected	2.467	2.214	2.345
Utilizing problem solving logic	2.200	1.929	2.069
Interpreting and summarizing facts collected in the subsystem study	2.429	2.286	2.357
Understanding the role of the computer as a tool for implementing systems work	2.143	2.000	2.071

TABLE 123--Continued

CHARACTERISTIC	FINANCIAL	MANUFACTURING	COMPOSITE
Understanding the necessity of data base design and development in total systems improvement	2.286	2.500	2.393
The use of electronic transmission of data	2.867	2.929	2.897
Searching for ways and means for improving procedures	2.133	2.214	2.172
Interfacing with the computer	2.133	2.571	2.345
Searching for the truth in performance procedures rather than simply reporting worker responses	2.286	2.571	2.429
The entry-level employee should possess foundations in:			
The diverse scope of office costs	3.286	2.857	3.071
The importance of the person-machine interface in total office performance and costs	2.786	2.571	2.679
The magnitude of office costs including the necessity for materials control	2.800	2.643	2.724
The relationship of office costs to overall performance of the organization	2.857	3.000	2.929
the role of employees' performance in affecting office costs	2.667	2.500	2.586
Forms development and control as an integral function of office costs	3.143	2.643	2.893
Estimating, securing, determining, and/or analyzing office costs	3.214	2.357	3.036
Cost-benefit ratio for machines and materials as utilized and/or proposed	3.000	2.571	2.786
The basic principles of accounting	2.467	2.571	2.517
The costs created by:			
preventive maintenance for equipment	3.214	3.000	3.107
inoperative equipment	3.000	2.929	2.964
non-utilized equipment	3.071	2.929	3.000
materials conservation	2.857	2.786	2.321
The entry-level employee should possess the:			
Ability to listen effectively in office situations	1.667	2.143	1.897
Ability to communicate orally to groups	2.467	2.286	2.379
Ability to communicate orally with co-workers, supervisors, and workers performing at the work station	2.200	1.929	2.069
Ability to explain procedures requiring special or technical skills and knowledges in a manner understandable to the recipient	2.267	2.357	2.310
Ability to communicate clearly in writing	1.933	1.857	1.897
Ability to compile reports from data collected	2.400	2.214	2.310
Ability to create and prepare oral presentations and visual displays	2.600	2.643	2.621